UNITED STATES BANKRUPTCY COURT
FOR THE WESTERN DISTRICT OF NORTH CAROLINA
CHARLOTTE DIVISION

IN RE:	)	
	)	
GARLOCK SEALING TECHNOLOGIES LLC, et al,	)	No. 10-BK-31607
	)	
Debtors.	)	VOLUME IV-A
	)	MORNING SESSION

TRANSCRIPT OF ESTIMATION TRIAL
BEFORE THE HONORABLE GEORGE R. HODGES
UNITED STATES BANKRUPTCY JUDGE
JULY 25, 2013

APPEARANCES:

On Behalf of Debtors:

GARLAND S. CASSADA, ESQ.
Robinson Bradshaw & Hinson, PA
101 North Tryon Street, Suite 1900
Charlotte, North Carolina 28246

JONATHAN C. KRISKO, ESQ.
Robinson Bradshaw & Hinson PA
101 North Tryon Street, Suite 1900
Charlotte, North Carolina 28246

LOUIS ADAM BLEDSOE, III, ESQ.
Robinson Bradshaw & Hinson PA
101 North Tryon Street, Suite 1900
Charlotte, North Carolina 28246

RICHARD C. WORF, ESQ.
Robinson Bradshaw & Hinson, PA
101 North Tryon Street, Suite 1900
Charlotte, North Carolina 28246

APPEARANCES (Continued):

On Behalf of the Debtors:

RAY HARRIS, ESQ.
Schachter Harris, LLP
400 East Las Colinas Blvd.
Irving, Texas 75039

CARY SCHACHTER, ESQ.
Schachter Harris, LLP
400 East Las Colinas Blvd.
Irving, Texas 75039

C. RICHARD RAYBURN, JR., ESQ.
Rayburn Cooper & Durham, PA
227 West Trade Street, Suite 1200
Charlotte, North Carolina 28202

SHELLEY KOON ABEL, ESQ.
Rayburn Cooper & Durham, PA
227 West Trade Street, Suite 1200
Charlotte, North Carolina 28202

ALBERT F. DURHAM, ESQ.
Rayburn Cooper & Durham, PA
227 West Trade Street, Suite 1200
Charlotte, North Carolina 28202

ROSS ROBERT FULTON, ESQ.
Rayburn Cooper & Durham, PA
227 West Trade Street, Suite 1200
Charlotte, North Carolina 28202

JOHN R. MILLER, JR., ESQ.
Rayburn Cooper & Durham, PA
227 West Trade Street, Suite 1200
Charlotte, North Carolina 28202

ASHLEY K. NEAL, ESQ.
Rayburn Cooper & Durham, PA
227 West Trade Street, Suite 1200
Charlotte, North Carolina 28202

WILLIAM SAMUEL SMOAK, JR., ESQ.
Rayburn Cooper & Durham, PA
227 West Trade Street, Suite 1200
Charlotte, North Carolina 28202

APPEARANCES (Continued.):

On Behalf of Interested Parties:

Carson Protwall LP:

JULIE BARKER PAPE, ESQ.
Womble Carlyle Sandridge & Rice, PLLC
P.O. Drawer 84
Winston-Salem, North Carolina 27102

Coltec Industries Inc.:

DANIEL GRAY CLODFELTER, ESQ.
Moore & Van Allen, PLLC
100 North Tryon Street, Suite 4700
Charlotte, North Carolina 28202-4003

HILLARY B. CRABTREE, ESQ.
Moore & Van Allen, PLLC
100 North Tryon Street, Suite 4700
Charlotte, North Carolina 28202-4003

MARK A. NEBRIG, ESQ.
Moore & Van Allen, PLLC
100 North Tryon Street, Suite 4700
Charlotte, North Carolina 28202-4003

EDWARD TAYLOR STUKES, ESQ.
Moore & Van Allen, PLLC
100 North Tryon Street, Suite 4700
Charlotte, North Carolina 28202-4003

Creditor Committees:

Official Committee of Asbestos Personal Injury Claimants:

LESLIE M. KELLEHER, ESQ.
Caplin & Drysdale, Chartered
One Thomas Circle NW, Suite 1100
Washington, DC 20005

JEANNA RICKARDS KOSKI, ESQ.
Caplin & Drysdale, Chartered
One Thomas Circle NW, Suite 1100
Washington, DC 20005

APPEARANCES (Continued.):

Official Committee of Asbestos Personal Injury Claimaints:

JEFFREY A. LIESEMER, ESQ.
Caplin & Drysdale, Chartered
One Thomas Circle NW, Suite 1100
Washington, DC 20005

KEVIN C. MACLAY, ESQ.
Caplin & Drysdale, Chartered
One Thomas Circle NW, Suite 1100
Washington, DC 20005

TODD E. PHILLIPS, ESQ.
Caplin & Drysdale, Chartered
One Thomas Circle NW, Suite 1100
Washington, DC 20005

TREVOR W. SWETT, ESQ.
Caplin & Drysdale, Chartered
One Thomas Circle NW, Suite 1100
Washington, DC 20005

JAMES P. WEHNER, ESQ.
Caplin & Drysdale, Chartered
One Thomas Circle NW, Suite 1100
Washington, DC 20005

ELIHU INSELBUCH, ESQ.
Caplin & Drysdale, Chartered
600 Lexington Avenue, 21st Floor
New York, New York 10022

NATHAN D. FINCH, ESQ.
Motley Rice, LLC
1000 Potomac Street, NW, Suite 150
Washington, DC 20007

GLENN C. THOMPSON, ESQ.
Hamilton Stephens Steele & Martin
201 South College Street, Suite 2020
Charlotte, North Carolina 28244-2020

TRAVIS W. MOON, ESQ.
Moon Wright & Houston, PLLC
227 West Trade Street, Suite 1800
Charlotte, North Carolina 28202

APPEARANCES (Continued.):

Official Committee of Asbestos Personal Injury Claimaints:

RICHARD S. WRIGHT, ESQ.
Moon Wright & Houston, PLLC
226 West Trade Street, Suite 1800
Charlotte, North Carolina 28202

ANDREW T. HOUSTON, ESQ.
Moon Wright & Houston, PLLC
227 West Trade Street, Suite 1800
Charlotte, North Carolina 28202

SCOTT L. FROST, ESQ.
Waters Kraus, LLP
222 North Sepulveda Boulevard, Suite 1900
El Segundo, California 90245

JONATHAN A. GEORGE, ESQ.
Waters Kraus, LLP
3219 McKinney Avenue
Dallas, Texas 75204

Future Asbestos Claimaints:

KATHLEEN A. ORR, ESQ.
Orrick, Herrington & Sutcliffe, LLP
1152 15th Street, N.W., Columbia Center
Washington, DC 20005-1706

JONATHAN P. GUY, ESQ.
Orrick, Herrington & Sutcliffe, LLP
1152 15th Street, N.W., Columbia Center
Washington, DC 20005-1706

Official Committee of Unsecured Creditors:

DEBORAH L. FLETCHER, ESQ.
FSB Fisher Broyles, LLP
6000 Fairview Road, Suite 1200
Charlotte, North Carolina 28210

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E X H I B I T S

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P R O C E E D I N G S

JULY 25, 2013, COURT CALLED TO ORDER 9:30 A.M.:

MORNING SESSION:

THE COURT: Good morning.

ALL COUNSEL: Good morning.

THE COURT: We'll go back to where we were, I guess.

MR. HARRIS: Mr. Henshaw.

JOHN L. HENSHAW,

CONTINUED DIRECT EXAMINATION

BY MR. HARRIS:

Q. Good morning.

A. Good morning.

Q. We left off yesterday we were just getting into the exposure assessment that you conducted in connection with your work on this case. I think you briefly had explained what the overview process was; is that right?

A. That's right. This is an overview. Three basic steps. One is to develop the similar exposure groups, which is the guideline stipulation you need to do that. Determine the exposure profile, and then estimate the annual cumulative exposure.

Q. Okay. Now how did you go about doing step one, developing the similar exposure groups?

A. Had to examine the data with the claimants, understand what they did. And the literature -- and basically this slide

shows or represents the universe of data that I used to make the determination as to which individuals fall into which similar exposure groups.

Q. What type of literature did you consult?

A. Certainly the literature with respect to doing the assessment. Doing the exposure assessment as I talked about yesterday. The literature that deals with anything around frequency and duration of handling gaskets or insulation. The questionnaires, of course, from the claimants. I reviewed all the supplemental questionnaires from the claimants. The testimony from the claimants. They're the ones that are describing what they did and how they did it. Then certainly my professional experience in my involvement in work places, such as those described by the claimants. And then various textbooks which help inform industrial hygienists on how to do exposure assessments.

Q. Now the questionnaires identified occupations and industries for the claimants to select for themselves based upon what their experience was; is that correct?

A. That's basically correct. Although there wasn't -- they weren't terribly informative. But that was the intent behind the supplemental questionnaire.

Q. Did you get information about their occupations and industries, either from the questionnaire responses or the information they submitted in connection with that?

A. Yes, sir, I did. From the deponent's testimony as well as the questionnaires, yes.
Q. Now there were a lot of occupations that were identified on the questionnaires and industries, how did you know what those were -- what each of those trades did? Is this just off the top of your head or is there information you consulted?
A. No, there's specific information. The questionnaire had a total of 794, I think, various combinations of industries and occupations, which really boil down to when you take the blank spaces out or the unknowns, they really boiled down to 1,480 combinations of occupations and industries, which represent 74 occupations and 20 industries.

So the notion of what I attempted to do is boil that down into similar exposure groups. And I used the definitions from the National Academy of Science, which is the dictionary of occupational titles. Also used the Navel bureau -- Personnel Bureau of Information published in 1943, which dealt with military -- Navy occupations and any other source I could find, as well as certainly the deponent's description of their work activity.
Q. And then you broke them down into similar exposure groups; is that correct?
A. That's correct. Basically, I took those 1,480 and boiled it down into -- may I sort of approach and --

MR. HARRIS: Your Honor, may he step down --

THE COURT: Sure.

MR. HARRIS: -- to explain the slide to us?

THE WITNESS: It's a lot of words on that slide.

Basically taking those 1,400 occupations and industries, and boil them down into four, what I call gasket and packing, similar exposure groups.

And the first group, which is the most likely to be exposed to gasket and packing, their primary jobs involved the greatest opportunity of routine in-field fabrication of gaskets and packings, and the removal of gaskets and packing.

So group number one which are industrial pipefitters, steamfitters, plumbers, Navy machinist's mates, those are the ones that have the greatest opportunity for handling gaskets and packings.

The next group is boilmakers and workers, shipyard workers, Navy firemen, and there's an assortment of other occupations, I couldn't list them all here. But those involve routine work with gaskets and packing, fabrication, replacement and removal of gaskets and packing, frequently in this job, but it's expected to be less than group number one.

And also means they're also closely as bystanders to other people who are handling gaskets and packing.

Group number three is the next tier down. These are gasket and packing again, fabrication replacement and removal. But it's not their routine part of their job. The potential

for bystander is still there, because they're in proximity to others who may be handling gasket and packing. Those would be electricians, machinists and laborers, again a whole host of occupations there.

And group four is the last group which include painters, insulators, because they don't handle gasket and packing, but they certainly handle insulation. Clerical office workers and there's a number of people in group number four. They're not directly associated with gasket and packing, but they may be a bystander to somebody who may be handling gaskets and packing.

Q. Was there a fifth group of combinations?

A. There was a fifth group that didn't make any sense. The combination of industry like a autoworker in an asbestos manufacturing site. Well, you don't have those two combinations.

So there's a number of combinations that fall into group number five that just didn't make any sense. Either they didn't make any sense, or the exposure is so negligible, much less than group number four that it didn't make any sense to make any calculations.

Q. Again, the combinations are the combinations of the occupation and the industries that were on the questionnaire?

A. That's correct. It's 74 occupations and the 20 industries. That's taking all of that 7,480 -- or 1,480

combinations and distilling it down into these five groups. Four represent calculations that I made. The fifth one I didn't make calculations because it was so miniscule and you couldn't calculate them.

Q. All right. What about for their work with other asbestos products that -- or the potential exposures they might have from other asbestos products when they're doing a task that requires contact with gaskets and packing?

A. Well, my primary mission was -- or objective was to determine what other kinds of exposures they may have had while they're doing gasket and packing, and it's principally asbestos-containing insulation. So it's associated with the work.

If somebody's handling asbestos-containing gaskets at the frequency that I estimated here, they're more than likely -- or truly will be exposed to other sources of insulation, because that's where the work is being done.

And that's broken up into groups number one, two and three, again, order of exposure. The asbestos-containing insulation group one, pipefitters, are working alongside of insulation. They're in the environment where insulation is being used. That's why they're there. That's why the gaskets and packings may be there.

Steamfitters, plumbers, Navy machinists, they're in group one. They have the highest potential to be exposed to

asbestos-containing insulation. And in this case the pipefitters are also in group one for gasket and packing.

The ACI group number two, these are carpenters, glass workers, machinists. They're going to have some opportunity for asbestos-containing insulation, but not as much as number one.

Then the last one, group number three, these are like the floor installers, heavy equipment operators, painters. The likelihood of them being exposed to asbestos-containing insulation is less than groups one and two.

Q. You described, generally, the information that you reviewed, but for specific exposure information, can you identify those documents that you would have reviewed for your opinions?

A. In respect to the insulation, it's going to be professional judgment. It's going to be a whole host of things, including what the deponent's specified.

Q. Tell us about what the claimants -- or the information you garnered from the information submitted by the claimants and other sources.

A. Well the key bit of information here was examining what the deponents said about their work activity, which includes gasket and packing and insulation.

I reviewed -- we had -- we requested 471 questionnaires and we got 429 supplemental questionnaires back.

Q. You requested --
A. 471.
Q. Supplemental questionnaires?
A. That's correct.
Q. Right. Okay.
A. And we've got -- I got 429 supplemental questionnaires back. Reviewed every one of those, again, to determine whether in fact we had good information in respect to frequency, duration, and proximity to gasket packing and insulation.

I reviewed the 542 depositions related to 306 claimants, and these depositions varied as far as how useful they were, but there were decisions in some cases about how they handled various products.

Q. You say 542 depositions related to 306 claimants. Why would there be more depositions than claimants?
A. Some of the depositions from co-workers or from spouses. So it's not all claimants. It was whatever I had in respect to those claimants, and it came out to be 542.
Q. Okay.
A. Now to start with, I asked for when I first started this project, to give me a relative feel for how much information there may be available, and how I can make this assessment.

So I used the 27 depositions from, I think it was 24 historical cases. I requested that. I received that, and

that helped sort of develop, at least some idea of what kind of information may be available in the depositions.

Q. The historical cases were not current claims?

A. Not to my knowledge.

Q. They were past claimants against Garlock, correct?

A. That's what I understand, yes.

Q. You received those or you asked for those before the supplemental -- the responses were available to the supplemental questionnaires?

A. That's correct.

Q. Or the questionnaire process?

A. Yes. I had that first, then I got 249 depositions. Then I added another 51, and then we basically got to 306 claimants covered. That was in addition to the 27 depositions that represent 24 claimants which I got earlier.

Q. Okay. Now what did you do with this information?

A. The whole basis is to understand what activities were being done in a given day, what they did, how -- what their proximity was to gaskets and packings, the frequency of handling gaskets and packing, as well as what the other environment looked like.

This is an example of a typical day. From the outset, from the study design, what I did was build the day. Because work is made up of lots of activity, movement around proximity here, doing this. A worker's working eight hours a day,

typically.

So the notion here is to try to identify all those sources of asbestos, to the extent I could, during that given day. This is an example.

The focus was on gasket and packing, and the environment they work in, which typically is handling insulation or having a significant amount of insulation, depending on the environment.

And recognizing the first 30 minutes of the day is background. There's an exposure to background, but it's very small, but there's an exposure in background. I wanted to add that.

I wanted to identify what bystander kind of exposure a person handling gasket and packing may have. And that's what a good portion of the day is represented here. They're in the environment.

This represents three gasket and packing events of the day. Which means three times a day they're going to be taking a gasket and packing off or installing a gasket.

This also represents -- to get at a gasket you have to remove insulation. Now this represents only one time you have to remove the insulation, not every time. That was part of my assesment in estimating. I'm not going to say every time you have to remove insulation to get to a gasket, so I basically said one and a half -- basically -- on average one and a half

a day to remove insulation when you have three gasket and packing events a day.

Then also the last column represents the bystander exposure. If somebody is removing a gasket or packing, somebody else may be alongside of them doing the same thing. I wanted to be able to estimate what the contribution of asbestos is from that as a bystander, not only the direct, but also if they're working 10 feet away, what contribution may be coming from that source.

Q. So these will be the components of your analysis; is that correct?

A. That's correct.

Q. All right. And what does this slide tell us about those components?

A. This is how I added them up, basically. I took the direct exposure for gasket and packing and the bystander, and from that I calculated the fiber cc year, for one year that's associated with that work in each one of these groups.

Q. What's a fiber per cc year?

A. It's basically the exposure on average that a person receives throughout the year, and that calculated as to one fiber cc year. Then you multiply that by the number of years that person worked in that industry or worked in that position, and that gives you the cumulative lifetime exposure --

Q. Okay.
A. -- to asbestos. And I did the same thing for insulation. We have direct access, again, knocking off the insulation to get to the flange and gasket. There's bystanders working in the environment, may be doing other things, but working in the environment. Then there's a background contribution. So I added those contributions up and came up with the same. A contribution of asbestos fiber from insulation exposure and that came up to a cumulative view.
Q. All right. In order to estimate their exposure, what is the information that you need to extract from the data that was provided?
A. Basically the frequency, duration and concentration. Had to understand how often people do that task. What is the duration of that task. That tells you how much exposure they've had. Then identify what is the typical exposure for that kind of activity, and basically add all up into exposure profile.
Q. All right. Let's go through the first component in some detail. This is the direct gasket and packing work?
A. Yes.
Q. All right. So what is -- the first part of that is frequency of gasket and packing work?
A. The exposure depends to some extent on how often somebody does that job. They do it 10 times, 50 times, 100 times,

everybody -- it depends on how many times people do that task.

So my objective here was to determine how many times on average for 250 days a year that somebody handled a gasket or packing.

In the published literature, Carl Mangold in 2000, had typically two gaskets or packing replaced on a single day. That was Carl's testimony -- or I think it was his paper.

The key piece here is what the claimant said. This is just some example. I took out the names here, but these are examples of -- for example, the first pipefitter, two or three gaskets per day.

Now this person also said it took between two and three minutes or 10 minutes, I think, per gasket. So it was short in duration. So it was a very quick job.

Another pipefitter said 10 gaskets per week. Another pipefitter said every day. Like I said, a lot of times there's not a lot of specificity in the testimony.

Probably every day. A millwright said packing replaced once per month, sometimes once every two or three months. And then a nonunion electrician said maybe 2 or 3 percent of their job may be doing gasket and packing.

But from the outset I wanted to -- to the extent I could, overestimate what the exposure or contribution may be from gaskets and packing.

So the plausible upper bound for my assessment was three

events a day for group number one. Now group number two, group number three will be less than that. But group number one were three events.

Q. Mr. Henshaw, you took out the names because those would be confidential; is that correct?

A. That's correct.

Q. You just left the initials?

A. Yes, that's correct.

Q. Okay. So for group number one, the upper -- the plausible upper boundary frequency was three events per day. How many does that work out to a year?

A. For each group, this is the way it works out. For say a pipefitter in group number one, that's 750 tasks per day.

Now -- I also am estimating that every gasket they handle, these 750 are asbestos-containing. Now I know from the testimony, I know from my personal experience they handle a lot of other gaskets. But for this purpose I'm saying all 750 are asbestos-containing gaskets.

Group number two, 300. Group number three, 35. And then 19 for group four. That's on an annual basis. Again, that's average. Some days may be more, some days may be less, on average for a pipefitter 750.

Q. Let's look at group four for a painter for example. You say 19 tasks per year?

A. Per year.

Q. Now is that going to be -- you're assuming a painter is actually -- you're assuming they're actually going to change 19 gaskets per year?
A. That -- yes. That's what I'm assuming. Not all painters are going to do that, some painters might, maybe do one or two. The testimony with respect to painters is basically no description with respect to handling gaskets.
Q. Right. Okay. So the committee has engaged an expert named James Shoemaker who worked as a superindependent of pipefitters during the 1980s at the Norfolk Naval shipyard. He had other positions as well, but for some period of time in the '80s to early '90s, he was the superindependent of pipefitters at the Norfolk Naval Shipyard. Do you understand that?
A. Yes, I do.
Q. Have you had a chance to see his deposition?
A. I have, yes.
Q. We asked him at his deposition, what was the frequency -- how many gaskets would a pipefitter remove in a year. This is what he said.

Is there a number you would think for an individual pipefitter?

I would think it would be less than 750. A lot depends on what systems and what ship he was working on. 750 is a lot of gaskets to remove in a year.

All right, would it be 500 or less?

I would guess one individual pipefitter, it would be more like 250 or 300.

So this is what he estimated based on his experience in his shipyard. This obviously is lower than what you've estimated for pipefitters; is that correct?

A. That's correct. And from the outset I was going to try to overestimate to the extent I could, the handling of gaskets and packing, and also assuming all are asbestos-containing. I don't know if he commented -- I forgot whether he did comment --

Q. Well, in fact he did comment. That's all the gaskets, rubbers, spiral wound, compressed sheet. But you're assuming these are all compressed sheet gaskets in your 750 a year?

A. Yes.

Q. That's why you say it's a plausible upper bound?

A. That's correct.

Q. Now what's the next step after frequency in your analysis?

A. Well, it's all depending on how much time it took. Because remember one pipefitter said a couple seconds or minutes to remove a gasket, and some said longer. So the idea was, what is a reasonable estimate in respect to the duration of handling the gasket. Because the duration is key in determining how much exposure you get from the gasket and

packing material.

In the published literature, I broke up gasket and packing task into three basic groups or four basic groups, gasket fabrication, gasket removal, gasket replacement and packing gasket replacement. This represents just three of those.

In the literature, Madl 2007 said a fabricated gasket may take one to 10 minutes. The gasket removal, two to 10 minutes. Williams in their paper had five to 10. Boelter, one to 24 minutes.

In the packing side, two to 26 minutes, Boelter. Anderson in '82 said 10 to 30 minutes. And then McKinnery and Moore, 46 minutes.

The evidence based on the deponents that I reviewed in fabrication, it was anywhere between half a minute and 90 minutes. In the removal side, half a minute to 360 minutes. And -- but the median was 20 in that case. The median for packing was 30. And it ranged from .5 to 180 minutes.

Q. What did you conclude?

A. For this estimate I estimate 30 minutes on average. So I'm taking the two or three minutes, and I'm taking the larger on average saying 30 minutes for this estimate.

Q. All right. We looked at frequency, duration, and then what's the next component?

A. Well the next component is determining what the exposure levels are in respect to this assessment.

Q. And so what did you rely upon for the exposure levels? Because you didn't have direct monitoring data for any of these current claimants?
A. Exactly. There was no data in respect to any of the deponents which described any estimates of what exposures were. There were descriptions, but they weren't estimates.
From the outset I wanted to gather the universe of data to understand what does the data tell us in respect to exposure, all the data that's available.
And the first, this represents really the decision logically as to what to do with the data that I've reviewed.
Q. When you refer to data, what are you actually talking about?
A. Well the datapoints, exposure results.
Q. Okay.
A. All the exposure results. Put them into this process and determine whether in fact they meet tier number one, which is the best data and the data I would choose to use. Tier number two is data I would use to compare, to see whether we're in the ballpark. And tier number three are data that's just not useful for this exercise.
Q. How large of a data set were you looking at? Were you looking at just the peer-reviewed literature?
A. No. If you look at going from left to right, everything in the U.S. I excluded everything outside the U.S. I wanted

everything in the U.S., I wanted to determine whether it was a study or not. There's a lot of data points out there, there was not studies. And then if it did -- if it was a study, then determine whether it was peer-reviewed or was it unpublished. And then both of them go through a data quality criteria WHO speaks about, in respect to what data you take in and how you evaluate those data, based on whether it's representative of what you're trying to estimate. Whether the sampling analytical technique is the right technique or is there quality assurance, quality control issues, or is it task data. I'm not looking for eight-hour data. I'm looking at tasks. That's what I'm building, are the tasks during the day. Then make a determination does it fall into tier one, two and three.

Q. Can you tell us the studies that you selected for your assessment?

A. In respect to the gasket activity, that's the fabrication and installation removal and replacement. These are the data for tier one that I selected for this exercise.

Q. Mr. Liukonen testified earlier this week about his study for the United States Navy. Is that one of the studies --

A. The Liukonen in '78 is the data from his report, not all of it, only the data that's relevant for this exercise.

Q. It looks like you considered his data for fabrication, installation, removal and replacement; is that correct?

A. That's correct. That's correct.
Q. So it was an important study in your assessment?
A. It very much was.
Q. On all phases of gasket work?
A. It was.
Q. Also I see Cheng and McDermott. Can you tell us about that paper?
A. Cheng and McDermott did a similar thing where -- and I think you -- it's probably already been introduced, that paper published in '91.
Q. We talked about it with Mr. Boelter yesterday and with Mr. Liukonen. So is it a peer-reviewed paper?
A. It is a peer-reviewed literature. It was done by Chevron's IH folks, and it was a good paper. And they -- we used -- I used the data in there to make the determinations as far as what would be removal. And that's where I came up with 0.114.
Q. All right. I see at the bottom, packing replacement Boelter 2011. Can you tell us about that paper?
A. That's the only data that met tier two that represent packing -- packing removal and installation. It's average data, but it was still useful and there was 52 results there that I used.
Q. All right. So we talked about the frequency, duration and concentration of direct gasket and packing work. The next

component is what?
A. Well the next component is what about bystander, people are standing by or working around somebody else removing a gasket or packing material.
Q. How did you estimate that exposure?
A. Well, the -- because we didn't have exposure data, what I used was, Donovan in 2012 came up with -- it's a paper on modeling to determine at what level away from the source would somebody be exposed or might be exposed.
A. And based on this model, the model was -- used original data, but it came up with this model that basically said between 1 and 5 feet from the source of the generated source of asbestos, it would be 50 percent of whatever that concentration was; 5 to 10 feet be 35; 10 to 30 feet -- 5 to 10 feet be 35 percent; 10 to 30 be 10 percent. And anything greater than 30 feet away from that source, it would be basically 1 percent of that source.

And so I came up with an adjusted factor, assuming that 25 percent of the time somebody's working within 5 feet of somebody who is handling the gasket and packing.

Another 25 percent which is the column on this side -- another 25 percent of the time, 5 to 10 feet away, and another 25 percent, 10 to 30; another 25 percent, greater than 30 feet away.

It's an estimate, we don't have that kind of detail in

depositions. But it's an estimate, it's a reasonable estimate, a proximity to somebody else working with gaskets and packing.

Q. So you multiplied your adjustment factor by their direct -- by the direct gasket and packing exposure that you calculated previously, and added that to the gasket and packing?

A. That's correct. So now I have a total of contributions from direct activity and contributions from bystander activity.

Q. Okay. Can you tell us what this slide then depicts?

A. This is the result for group one, two, three and four. Equivalent to a eight-hour TWA, which would be used for the one-hour cumulative exposure -- or one-year cumulative exposure.

For group number one, that's the one highest exposed, highest potential exposed, 0.02 -- 0.020. The second group is .0081. The second (sic.) one is .0009, and the fourth one is 0.0005.

Now this also shows the OSHA PEL which is a .1. That's our current OSHA standard today. That's an eight-hour time weighted average.

Q. Okay. So for group one occupations like pipefitters and machinist mates whose plausible upper bound is three gaskets a day, average -- eight-hour time weight average is 0.02 fibers

per cc?
A. That's correct.
Q. How does that compare with the OSHA permissible exposure limit?
A. Well, you can see from the bar, the OSHA limit is 0.1 fibers per cc. So it's significantly low, 20 percent.
Q. All right. You mentioned the OSHA permissible exposure limit. This is a chart similar to what I believe Mr. Liukonen or Mr. Boelter presented yesterday. Can you tell us what this represents, just very briefly?
A. Yes. This represents basically the change in the TLV or OSHA standard over time. It was at 30 fibers per cc -- or really was 5 million particles as the note down below indicates. It was 5 million particles, that's equivalent to 30 fibers per cc.
Q. Where do you get that conversion factor?
A. This conversion factor is in the ACGIH TLV document -- it's in the literature. And that conversion factor is a common conversion factor that's applied to the million particles per cubic foot readings.
Q. Well, at one time OSHA had both a million particle per cubic foot standard and a fiber per cc standard for asbestos, correct?
A. That's correct. When they adopted the Walsh Healey Act in 1969.

Q. OSHA adopted in 1971?
A. Well, '69 OSHA -- or Walsh Healey adopted the ACGIH values, and then under 6a rule making, which means adopting consensus standards, OSHA adopted that in '71, and then developed their own standard in '72.
Q. Okay. And what was the relationship -- what was the million particle per cubic foot standard in fibers per cc?
A. Equivalent 1 million particles equivalent to six fibers per cc.
Q. The OSHA standard in '71?
A. Oh, '71 it was 12. Then it went to 5. And then in '76 it went to 2. In '86 it went to .2. And then '94 it went to .1.
Q. And today it's .1?
A. That's correct.
Q. Okay. Then you compared -- did you calculate a career at those exposure levels that you estimated?
A. Well, at the current exposures or OSHA standard, that standard's written based on a 45-year career at that exposure. And that gives you the 45 fibers per cc calculation, basically 0.1 times 45. That gives you the cumulative exposure. It's allowable --
THE COURT: You said 45, you mean 4.5.
THE WITNESS: I'm sorry. 4.5, yes.
That gives you the 4.5 cumulative allowable exposure

under the OSHA standard.

If you took that same 45-year component -- now I'm not saying all components were in these positions for 45 years. But if they were, this is the calculated value for group number one. It would be .91. And group two, group three, group four.

The slide also shows -- this comes out in the Finley paper, that exposure for career auto mechanics is generally estimated to be between 1.96 and 2.79. So considerably higher than where we are with gaskets and packing.

Q. All right. Are these fiber years? I see the slide actually says fiber per cc -- but we're talking about fiber --

A. These are fiber cc years, yes.

Q. Or 45 career, that's what's indicated?

A. Based on 45-year career in that position, yes.

Q. Mr. Henshaw, we heard something about the exposure information during the cross of Dr. Garabrant earlier this week. He was crossed about whether the asbestos in friction materials converts to fosterite, which is something different than asbestos, during brake wear -- in that brake wear dust. But is fosterite, first of all, fibrous?

A. No. Fosterite is not a fiber, no.

Q. And so when we look at industrial hygiene studies, or you look at industrial hygiene studies that are describing exposures from brake mechanics that are indicated there, does

fosterite impact those numbers at all?
A. No. This is not measured fosterite, this is measuring asbestos fibers. So regardless of how much fosterite is in whatever the material is, it's the fibers that we're counting in the air, that's what we're counting.
Q. Based on the industrial hygiene literature that you've reviewed with respect to the vehicle mechanics and you cite in your report, how does the brake mechanic's exposures compare with gasket exposures --
A. Well --
Q. -- or gasket and packing exposures?
A. Well they're significantly higher. If you take this overall career estimate here for auto mechanics, then compare it to any one of the four groups of gaskets and packing, the auto mechanics are considerably higher.
Q. Okay. Mr. Liukonen projected this slide referred to Dr. Irving Selikoff's book in 1978. You're familiar with that quote?
A. Yes, I am.
Q. Does that still stand based upon your analysis of the gasket and packing literature, and with respect to the descriptions provided by the claimants in this case?
A. Yes. In my view, yes.
Q. Now he's talking about shipyard applications. In your experience, is there a significant difference between the way

gaskets and packing are used in shipyards, versus the way they're used in industry or commercial applications?

A. Not the way gaskets and packings are handled. There's only one way to take it off. You may run into issues, but there's only one way. And the environment's going to be different, of course. The surrounding environment will be different. But the way you handle a gasket and packing is going to be the same.

Q. Okay. Now let's move on to the next component in your analysis, that's the insulation exposure; is that correct?

A. Yes.

Q. Now is this -- what does this insulation exposure represent?

A. Well, what I attempted to do is, what are the -- just like gaskets and packing -- what are the direct activities that these folks who handle gaskets and packing would do that would create exposures, and then what their bystander's exposure.

So this is insulation for direct removal to access the gasket and packing material. And I went through the same process as we went through with gasket --

Q. You looked at the published literature?

A. Published literature, Mangold, remove pipe insulation, bolts prior to any gasket replacement. He describes that. Certainly the evidence the pipefitters described working with

or removing insulation to get at the gaskets and packing.

Mr. T, a millwright, reported 9 out of 10 times he had to remove insulation to get to the valve.

Mr. W, a plumber, personally removed insulation to access lines, and then tying new lines into old lines, tying new lines, which means you have to replace the gasket when you do that.

Q. They talk about how they would remove the insulation in order to get to the lines?

A. With whatever tool they had, wrenches and hammers, typical way to get at it.

Q. The insulation that we've heard about, sometimes in the Navy they use portable pads, and sometimes in the Navy they use hard insulation. Historically are you familiar with how the lines were insulated in industry commercial applications?

A. Historically it was hard insulation. You had insulators who insulated afterwards. Pipe mechanics or pipefitters for example, would come in, knock the insulation off, and then have the insulators come back and reinsulate. But it's hard insulation, typically.

Q. What about portable pads?

A. I didn't see any portable pads. Certainly historical, portable pads in my environments that I've been in or ships that I've been in.

Q. Do you have an understanding as to whether the shipyards

actually had shops that would make portable pads for the fittings and valves on ships?

A. I know that the shops are making all different sorts of asbestos-containing material, insulation material, and some made pads, yes, I know that.

Q. Okay. So what was your conclusions with respect to the review of the literature and evidence on the frequency of insulation removal to access the gaskets and packing?

A. Well, from the outset I didn't want to overestimate this component of it. And so I assumed, based on -- because there were some people said not all the time, 9 out of 10, and some people said not all the time I removed insulation.

So from my estimate, I estimated that 50 percent of the time somebody has to access or remove insulation to get at that gasket or packing.

Q. All right. What about the duration?

A. Duration, the same thing. Looking at the literature, the Nicholson -- Boelter and Nicholson were two sources. Boelter estimated 15 minutes to remove pipe insulation. The pipefitters Nicholson in '79 said pipefitters spent 10 percent of their day removing insulation. My estimate is less than that. But the evidence, again, talking about how often they did that to the extent they're definitive, Mr. L, machinist, estimated 30 minutes to remove insulation from a flange.

Mr. C estimated that it took between 10 to 30 minutes to

remove insulation.

H, Mr. H, millwright, estimated 10 to 15 minutes.

Mr. F, a pipefitter, estimated 5 to 10 percent of his work involved removing pipe insulation.

Q. All right.

A. So my estimate was it would take about 15 minutes to remove insulation to access the flange.

Q. What about concentration? Did you go through a similar analysis in reviewing the insulation data to determine what to select and use for this study?

A. Using the same decision, logic and criteria, I did the same thing, looked at everything that I could find, all the studies, whether it was a study or not, peer-reviewed or not. But ultimately deciding whether the data fits in tier one, tier two or tier three.

Q. All right. So you considered published and unpublished. For the unpublished, could that still make it through your analysis to end up in tier one?

A. Sure. Yeah, as well as in the previous for gaskets and packing. If the unpublished met the criteria, representative standard methods were used, accurate methods, good quality, quality assurance, quality control, and it was a task data, it wasn't group data, it was a task data, then it could have fallen into tier one.

Q. All right. And so what data did you end up selecting?

A. In this case the only task data I had as we look at the universe of data out there, was the Boelter study. We had no -- no representation or no data in the literature that dealt with just the task of accessing the gasket and packing. And the Boelter study was the only data that I had that met the ultimate tier one criteria.

Q. But aren't there lots of studies in the literature with respect to insulation exposures?

A. There's lots of studies out there that talk about rip out. They talk about lots of other activities, but not specifically the removing insulation to access a gasket or packing.

Q. All right.

A. That's what I needed to do this task analysis.

Q. And how did Mr. Boelter's data compare with what else was in the literature?

A. His is around the ballpark. There's lots of data much higher than that during rip out. His data is reasonable, within -- within the activity. If you spread the data out, his is right in there where everybody else is. It's not the extreme by no means. The extreme is very high.

But this, in my estimation, is the best estimate, the best representation of what it takes, how much exposure one would have to access the flange or packing.

Now in this case I only took the first 15 minutes of his

study, not the entire day. I didn't want any cumulation over time, so I took the first 15 minutes of the study, and that's what is shown here for the 83 fibers per cc.

Q. Okay. The next component of your analysis was the bystander exposure to asbestos-containing insulation?

A. Yes.

Q. Did you go through a similar analysis?

A. Similar analysis, talking -- looking at what the testimony indicated. And there were several people that plumbers and pipefitters talked about in the vicinity of insulation. The removal work. Mr. L said the shipyard looked like a snowstorm. Now these aren't very helpful as far as a -- amount they're exposed to. But it does tell me there's some significant exposure.

Lots of insulation falling on people when they're working below them.

Mr. B described that when insulation was removed, the atmosphere looked like a snowstorm out there.

So I basically did the same thing. I calculated a bystander factor based on -- based on the data, and this is the data.

From the selection of what the environment looked like, and I'm trying to estimate what somebody in that environment may be exposed to. This is not direct activity. This is activity because they're in the proximity in that environment.

I used the application mixing prefab and removal and spraying, which are typical activities during the '60s, for example.

I broke out industrial and shipyard, because they're two distinct industries. Shipyards historically have a lot more asbestos exposure than industrial facilities.

And the average numbers I used came out of Cooper and Balzer, NIOSH, Balzer and Cooper with 68. A shipyard, Balzer, Cooper, Ferris, NIOSH, Mangold, Nicholson, and Murray. Those are the data sources for those averages --

Q. Now --

A. -- 4.4 and 41.

Q. I know the Mangold 1970, that's his -- the Asbestos Exposure and Control at Puget Sound Naval Shipyard?

A. Yes, sir.

Q. And the committee's expert Roger Beckett was a co-author of that paper?

A. Yes, that's correct.

Q. So did you do a similar analysis on the bystander exposure to a calculated adjustment factor?

A. Similar analysis, recognizing that ACI group one they're going to be closer to the sources. ACI two less so. And ACI three -- in fact 100 percent ACI three is greater than 30 feet away. Using the same modeling that Donovan modeled estimating what the factor would be for bystander exposure in those

environments.
Q. Okay. Then you had background exposure that you considered. Did you go through the same type of analysis on frequency, duration and concentration?
A. Yes, to some extent. The literature or the depositions didn't tell me much about how much break time they had, how much time before the morning and after. I assumed 30 minutes in the morning, 30 minutes at lunch time, and 30 minutes in the evening. So that was an assumption that I make, because there's not much description about how much break time or how much time away there was.

So I assumed 90 minutes for that. And I used, basically, the OSHA clearance factor, or clearance number, which is 0.01 fibers per cc. Becasue we're talking about in the '60s and early '70s, used that as background exposure for the shipyard. And I cut that in half for industrial applications. That's -- that's what added up the total insulation number, which is this value.

Now this happens to be industrial, not shipyards. And this is another eight-hour equivalent for the contributions from asbestos insulation. Asbestos coming -- fibers coming from asbestos insulation.

In group one, because their proximity is right there with that environment of that exposure at 5.5 fibers per cc. Group number two, they're less involved, 3.2. Group number 3, 1.8.

Group number 4, 1.7.
Q. You've indicated, again, the OSHA PEL at 0.1 fibers per cc there. That's the current level that's been in place since 1994?
A. That's correct.
Q. OSHA hasn't lowered it?
A. No, sir.
Q. Has it been under consideration for lowering?
A. Not that I'm aware. Certainly not during my time.
Q. All right. From your perspective and from industrial hygiene perspective, is this regarded as a safe level of exposure to asbestos?
A. No. This -- certainly in the '70s this would have been a lower exposure. In early '70s of five fibers per cc, all except group number one, would have been below the OSHA standard at that time. Now the OSHA standard is .1 and all these are above that.
Q. I'm asking about the OSHA permissible exposure limit here. Is that from a industrial hygiene perspective regarded as a safe level?
A. Yes, sir, it is.
Q. Let me ask it this way: Is this an opinion about this level being a safe level something just expressed to Garlock or have you actually testified before Congress about?
A. I have testified before Congress on that point.

Q. Mr. Henshaw, this looks like the example workday of the pipefitter; is that correct?
A. That's correct. Now this is the day of a pipefitter. The only exception is, because remember I said 50 percent of the time you have to remove insulation. And we've got three gasket events. So basically on an average it's one and a half a day. This is an example of one day. The next day there will be two access gaskets and packing which is this indication here.

So we've got background, we've got bystander exposure for period of the day, we got three events, gasket and packing events. We've got one insulation for this day. But as this note implies, on average it's one and a half. The next day there will be two of these accessing events. I estimate only 50 percent of the time one would have to remove insulation.

But this would be a typical day of a pipefitter.

Q. Have you prepared a slide that illustrates the comparison of certain example occupations based upon their insulation exposure versus their gasket and packing?
A. Yes, I have.
Q. Is that what this represents?
A. This is a representation or comparative exposure of fibers coming from insulation as I calculated here, versus exposure from gaskets and packing as I've calculated here.

Which includes the bystander and direct, and bystander

and direct for both activities.

And for -- these are examples of just four occupations out of the many combinations that I have.

The pipefitter, the contribution of asbestos coming from insulation, 5.5 fibers per cc. In respect to the gaskets it's 0.02.

And you can go down the line showing the representation of a gasket from insulation which is a large bubble, and the blue dot for gaskets and packing.

Q. All right. So the pipefitter's an example occupation in group one, and there's only one alternative insulation group associated with group one; is that correct?

A. That's correct. In group one there's only one and one, which is gasket and packing and insulation. Group two there is one and two. So there's -- in group two there's close proximity to insulation and then there's less exposure to insulation.

Q. And the boiler workers in one of those groups, and the electrician is -- how many alternative exposure groups are there in group three?

A. In group three there are three exposures.

Q. Okay. And the electrician's one of those groups?

A. Same way with -- there's three alternative variations, yes.

Q. And the electrician's in one of those alternative

exposure groups?
A. They're in 3/1, which means gasket and packing group number three, and alternative asbestos-containing insulation group one.
Q. Okay. And similar with the painter, or your alternative exposure groups in group four?
A. Painter chose that because it's a common occupation. In this case it's four, which is gasket and packing group four, and alternative or asbestos-containing insulation group two.
Q. Okay. And this is just for industry. There will be different estimates for shipyard work?
A. Shipyard would be different, that's correct.
Q. Okay. I mentioned in our opening statement that you made certain proclaimant or conservative assumptions with respect to insulation exposure. Are there insulation exposures that the claimants would likely have had that were not factored into your analysis?
A. Yes, there would be many. I can only estimate the exposure that's associated with gasket and packing work, not other direct exposure. For example, electrician. That electrician doesn't typically work around insulation. That's why they're in group -- in group number three. And however, this group is group number one. Some environments they're not around insulation. There might -- however, they're hanging hangars knocking off fireproofing to put in a control box,

electrical control box. So they have other sources of direct asbestos exposure that I did not account for.

Q. What about pipefitters?

A. Pipefitters the same way. I'm only looking at the environment in which gasket and packings were handled. If pipefitters are doing other activity, direct exposure -- I'm only counting one direct exposure activity, and that's accessing the gasket and packing. There may be other -- more likely there are in industry, other direct sources of asbestos.

Q. Now the blue dots represent an assumption of working with compressed sheet gaskets every time they were working -- asbestos compressed sheet gaskets every time they were working with gaskets; is that correct?

A. That's correct. The 750, for example, the pipefitter, all of those I'm estimating were asbestos-containing sheet gaskets.

Q. Did you understand there are fiber wound gaskets, rubber gaskets, other nonasbestos gaskets they work with?

A. Yes. And the deponents testified there were a number of gasket materials available and used.

Q. And you also understand Garlock didn't manufacture all the compressed asbestos sheet gaskets?

A. I know there's many other manufacturers, that's correct.

Q. Mr. Henshaw, at this time I think just to wrap up, I want

to introduce a couple of documents.

First like to offer appendix one to your report, it is labeled GST-15158A. And can you tell us what appendix one to your report is?

MR. FINCH: Objection; hearsay, Your Honor.

THE COURT: Overruled.

MR. HARRIS: I was going to offer it.

MR. FINCH: I object to the offering of the document because it's hearsay. It's not a summary of voluminous documents. He can talk about it, but if he tries to put the document into evidence, I object on a hearsay basis.

THE COURT: I'll overrule your objection. Go ahead.

BY MR. HARRIS:

Q. Can you tell us what Appendix 1 is?

A. Yeah. Appendix 1 of my report, this is the assignment of all 708 -- excuse me, 1,480 combinations. This is the assignment of where all those occupations in industries fit into these groups. The first one, the first title is Gasket and Packings. So remember I said there's five groups. The fifth one there was no calculation. But one through four they're identified here which occupation. For example the second page, custodian in residential buildings. I've got them as mostly five, except in construction I have them in four. So in construction I've estimated that those individuals may have fallen into group number four for gasket

and packing.
Q. All right.
A. Just an example.
Q. There's also a table in your report that summarizes the results of your analysis in terms of the exposure; is that correct?
A. Yes.
Q. This is Table 8 in your report; is that correct?
A. This is a summary -- yes -- that's from my report, Table 8. Basically it's a summary of describing the ranges of exposures in these four groups.
MR. HARRIS: All right. We've marked this as GST-15158C.
Your Honor, we offer this table into evidence.
MR. FINCH: No objection to that.
THE COURT: All right. We'll admit that.
(Plaintiff's Exhibit No. GST-15158C was received into evidence.)
THE COURT: Not sure whether 15158A was offered, but I'll treat it as offered and objected to and the objection was overruled.
MR. HARRIS: I'm sorry, Your Honor. Thank you.
(Debtor's Exhibit No. GST-15158A was received into evidence.)
BY MR. HARRIS:

Q. Mr. Henshaw, I would like to hand you GST-15158D as in David. Can you tell us what this document represents?
A. Yes. This is a summary of the actual results for these occupations and industries.
So if you follow this, you'll see exactly, does it fall into group three, gasket and packing or ACI group three, and actually what the computation was in respect to their exposure.
Q. So you have a big notebook that's on your witness stand over there that has all the data itself. This is a summary of that data?
A. Yes, sir.
MR. HARRIS: Your Honor, at this time Garlock offers GST-15158D as in David.
MR. FINCH: Objection; hearsay; cumulative of the testimony.
THE COURT: Overruled that and accept it.
(Debtor's Exhibit No. GST-15158D was received into evidence.)
BY MR. HARRIS:
Q. One final question, Mr. Henshaw. This is industry exposure, correct?
A. That's correct.
Q. Not Navy, right?
A. That's correct.

Q. If we were looking at Navy or shipyard exposure for the pipefitters, that exposure, the red ball, would that be larger?
A. It would be much larger, yes.
Q. And would the blue dots still stay the same?
A. The blue dots stay the same. There's a gasket and packing activity is that activity. But the asbestos-containing insulation does vary, obviously shipyards are much more.

MR. HARRIS: Thank you, Mr. Henshaw.

Pass the witness.

THE COURT: Okay. Step down -- or you can sit down.

MR. FINCH: Give us a second to get set up, Your Honor.

THE COURT: All right.

CROSS EXAMINATION

BY MR. FINCH:
Q. Good afternoon, Mr. Henshaw.
A. Good morning.
Q. Good morning. When you've been here a little while, you tend to forget what time of day it is.

Mr. Henshaw, you don't have a degree in engineering, correct?
A. That's correct.
Q. And you are not a material scientist, correct?

A. I'm not sure what that is, but no, I'm not.
Q. You don't have a degree in epidemiology, correct?
A. No, sir, I do not.
Q. You also are not a medical doctor, correct?
A. That's correct.
Q. You haven't published any peer-reviewed publications on asbestos and disease, correct?
A. Not specifically, no, sir.
Q. You never published an epidemiology study of asbestos-exposed workers, correct?
A. That is correct.
Q. It is correct you have never published such a study? I'm right, you've never published such a study, correct?
A. Such a study --
Q. Epidemiology study of asbestos-exposed workers?
A. That is correct.
Q. You've never gotten a grant from the National Institute of Health to study how asbestos fibers cause disease?
A. No, sir, I have not.
Q. And you never received any federal funding at all to study asbestos and disease while you've been in ChemRisk, correct?
A. That is correct.
Q. You've never published anything in the peer-review literature concerning asbestos gaskets, correct?

A. Yes, sir, that's correct.
Q. You've never written any articles in the literature about the practices for removing asbestos gaskets, correct?
A. Yes, sir, that is correct.
Q. As of 2012, you had only done air monitoring or sampling during a gasket removal operation one time, correct?
A. No, sir, that's not correct. Precisely -- what I've -- what I did was, I had the opportunity for that one task. Now I've sampled many times during the activity where gaskets and packings were removed. But I had one opportunity that I could just sample that particular task.
Q. So you had one opportunity where you were just sampling gasket removal, correct?
A. The contribution from just that one source, that's correct.
Q. You've never published anything in the peer-reviewed literature concerning testing products for asbestos fiber content, correct?
A. No, sir, I have not, that's correct.
Q. You've never published anything in peer-reviewed literature concerning testing the fiber release from any kind of asbestos product, correct?
A. That is correct.
Q. You never published a peer-reviewed article, the focus of which was air sampling for asbestos exposures for different

occupational groups, correct?
A. That is correct.
Q. While at OSHA you personally had nothing to do with evaluating asbestos exposure from gaskets and packing, correct?
A. As an administrator, that is correct. I did not have the personal contact in that way.
Q. In 2005 you went from OSHA to a company called ChemRisk, correct?
A. No, sir.
Q. You went from -- when did you leave OSHA to go to ChemRisk?
A. There's two questions there, let me answer. I left OSHA in December, the end of December 2004. I started my own consulting firm in 2005. Then I went to ChemRisk in 2011.
Q. So between 2005 and 2011 you had your own consulting business, correct?
A. That's correct.
Q. And that business was folded to ChemRisk in 2011, correct?
A. That is correct.
Q. And 2005 is when you first started gathering lots of detailed information about asbestos and gaskets, correct?
A. Well, I had certainly -- when you say lots of detail. I certainly had my own files. But after 2005 -- or in 2005 I

began to accumulate more data, records, whatever I can find dealing with various compounds, including asbestos and silica and a number of other.

Q. All right. Eighty percent of your time now is spent on litigation consulting; is that correct?

A. That's approximately correct. I've never estimated it and never counted it up, but that's an approximation.

Q. And 70 percent of that is on asbestos litigation, correct?

A. I think that may be a little high, maybe 60 to 70, but in that range probably.

Q. You worked for Garlock multiple times before it went into bankruptcy, correct?

A. I've been retained on a number of cases with Garlock. I don't know the exact number.

Q. You have worked for John Crane, which is a company that made asbestos-containing gaskets and packing, correct?

A. I have been retained by John Crane on a number of cases as well.

Q. You testified at trial for John Crane at least on one or two occasions, correct?

A. I have testified in John Crane cases. I don't know exactly how many, maybe one or two, yes.

Q. Including some in Newport News, Virginia, right?

A. Yes, sir, that's correct.

Q. You've worked for Yarway, which is a company that made equipment that had asbestos-containing gaskets as components?
A. I was retained by Yarway on a few cases. I don't know exactly how many. But they made pumps and valves.
Q. You've worked for Honeywell, which made asbestos-containing brakes through the Bendix line, correct?
A. Again, I had a few cases with Honeywell. I don't know exactly how many.
Q. You've done work for Georgia-Pacific, correct?
A. I have been retained by Georgia-Pacific.
Q. Georgia-Pacific makes an asbestos-containing -- used to make an asbestos-containing joint compound, right?
A. That is correct.
Q. That was a chrysotile product, correct?
A. That is correct.
Q. That was not an encapsulated product, that was a friable product, it was joint compound?
A. It was joint compound. It contained a small percentage of asbestos in a joint compound.
Q. And when it was sanded or mixed, it gave rise to asbestos fiber concentrations in the air in -- it ranges in the literature from 2 to 5 fiber per cc's on a time weighted average basis, right?
A. It depends on the applications, it depends on the activity being done. But it does generate fiber when you sand

the material.
Q. It generates a lot of fiber, right? There are measurements of asbestos fiber from joint compound, 50, 60, 70 comparable insulation, right?
A. No, sir.
Q. They're in the triple -- in the double digits in terms of fibers per cc for joint compound. You've seen literature like that?
A. Well, I've seen lots of literature on asbestos-containing joint compounds. And some operations such as mixing dry material, those concentrations could be in double digits, that's correct.
Q. And you would agree with me that the level of fiber release from asbestos joint compound you would say would be higher than from gaskets, right?
A. The exposure from joint compound during the sanding applications, or mixing applications, would be higher than joint compound. I mean, excuse me, then gasket and packing, sure.
Q. And it's been your testimony that mixing and sanding asbestos-containing joint compound does not increase anyone's risk of mesothelioma, right?
A. Based on the evidence in respect to dry wallers, people who actually do that on a routine basis, they have not shown an increased risk of developing mesothelioma.

Q. You've never testified for a plaintiff in an asbestos personal injury case?
A. No, sir, I have not been asked to do so.
Q. Since you joined ChemRisk, you never -- let me just back it up.
Since you formed your consulting company after you left OSHA, you've never testified for a plaintiff in any kind of lawsuit involving personal injury or death from a product or substance; isn't that true?
A. Since joining ChemRisk, that is true.
Q. Let's talk a little bit about what's ChemRisk. ChemRisk is something called -- you're a managing director of what is now called Cardno ChemRisk, right?
A. Yes, sir.
Q. Cardno is a big company that bought ChemRisk, which was a fairly good-sized company itself?
A. That is correct.
Q. And ChemRisk has office locations in San Francisco, Orange County, Boulder, Colorado, Sanibel, Florida where you live, Chicago and in Pittsburgh, right?
A. That's correct, yes, sir.
Q. Has 60 scientists on staff, published more than 1,000 papers at scientific conferences, 400 papers published by ChemRisk scientists are relied upon in litigation proceedings. Do you know that?

A. I know there's more than 60 scientists. I don't know how many papers have been published, nor how many papers have been referenced in litigation.
Q. The president of ChemRisk is Dennis Paustenbach, right?
A. Yes, sir, that's correct.
Q. And you've actually published a paper with Mr. Paustenbach, correct, that's the title of it?
A. Yes, sir. He was one of the co-authors, that's correct.
Q. And this is a letter from Dennis Paustenbach on ChemRisk letterhead to its valued clients.

"Over the past 25 years, our firm has been dedicated to contributing to the peer-reviewed scientific literature. Sharing our knowledge in this manner is what we consider to be our duty as scientists. Hopefully it has enhanced our reputation within the scientific government and environmental health communities, as well as in the courtroom. Enclosed please find abstracts for our recent publications, citations below, related to asbestos and benzene. Please pay particular attention to the asbestos take home paper. It represents a major commitment by our firm."

You've seen letters like that from ChemRisk out to corporate clients, correct?
A. I've seen this letter. I don't know if I've seen one before, but I've seen this letter.
Q. And the paper they're talking about is that Donovan paper

that you've cited to the court this morning, correct?
A. Yes, sir, that's correct.
Q. Another publication you've cited the court in your report is something called an "Asbestos Study of Bystanders and Workers During Installation or Removal of Gaskets and Packing." And you know that was funded by Garlock, correct?
A. I know -- I don't know how exactly how much was funded by Garlock. But I see the acknowledgment, yes.
Q. And it was written by people who you know to be at ChemRisk, right? Carl Mangold -- Amy Madl and Dennis Paustenbach are definitely at ChemRisk, correct?
A. Yes. Carl Mangold is the only one that's not at ChemRisk.
Q. And then another paper you cited, "Exposure to Airborne Asbestos During the Removal and Installation of Gaskets and Packing, a Review of Published and Unpublished Studies." Written by ChemRisk, right? Amy Madl at ChemRisk and Dennis Paustenbach?
A. It's written by those three authors, they work at ChemRisk.
Q. Yes. And what they conclude is the same thing you said today, the weight of the evidence indicates the use of hand tools and hand-operated power tools to remove or install gaskets or packing as performed by pipefitters or other tradesmen in nearly all plausible situations would not have

produced airborne concentrations in excess of contemporaneous regulatory levels. That's what they conclude in their paper, right?

A. That's one of their conclusions.

Q. And although -- then they acknowledge that the financial support for the underlying reserve was provided by a pump manufacturer involved in asbestos-related litigation regarding gaskets and packing. That's who funded that paper, right?

A. I'm not going to quibble over -- if that's a quote from the paper, then that's an accurate quote.

Q. Now you've also cited this paper in some brake cases, and I believe it's in your list of reliance here. That's got a group of people, some of them are from ChemRisk and others are from a company call Exponent, right?

A. Exponent University of South Florida, and then Tetra Tech Company out of San Francisco.

Q. Okay. And that -- you know that paper was funded by the car companies who have been involved in litigation involving brake dust, right?

A. Again, I'm not going to quibble over your statement there. It acknowledges -- that's a proper acknowledgment.

Q. Okay. Now Exponent, this is a letter to the RJ Reynolds tobacco company on Exponent letterhead. You know that Exponent was a consulting firm similar to ChemRisk, correct?

A. Yes, sir, that's correct.

Q. And this is Exponent, Dennis Paustenbach and Brent Finley and Patrick Sheehan were all at Exponent in 1999 and they were pitching RJ Reynolds on some kind of project, right?
A. I've not seen that letter, so I can't say what that letter describes.
Q. So you don't know that Dr. Paustenbach has worked for the tobacco companies?
A. I know he's been retained by Ford and a couple other companies. I don't know the extent to which he was retained.
Q. By -- RJ Reynolds is a tobacco company, right?
A. I don't know what all the products they make. I know RJ Reynolds does produce tobacco products. Like I said, I haven't seen this letter, so I don't know what this is about.
Q. Okay. But you have seen this study. This is a study by people at Exponent and ChemRisk where they're collaborating on paper -- this is a paper that Dr. Garabrant talked about, correct?
A. I have no idea what Dr. Garabrant talked about.
Q. Okay. You're familiar with this paper though, "Mesothelioma and Lung Cancer Among Motor Vehicle Mechanics, a meta-analysis." You've relied on it in the past and even cited it in your report here, right?
A. Yes. I'm aware of that paper.
Q. Okay. And it's written by people at Exponent and ChemRisk, right? Well, excuse me. It's written by people --

some of the people that wrote that were at Exponent, right?
A. Yes. Give me a minute and I'll go through all that. I don't see ChemRisk on there, but Exponent certainly University of Michigan.
Q. Okay. And again, you know that research was funded by the car companies, correct, for that paper?
A. Again, I'm not going to quibble over that acknowledgement. That's a proper statement in a peer-reviewed paper.
Q. And you've cited this paper before, in your brake work paper by Hessel, who is at Exponent. "Mesothelioma Among Brake Mechanics and Expanded Analysis of a Case Controlled Study." Familiar with that, right?
A. I am familiar. Not everyone's from Exponent, but I'm familiar with that.
Q. And Dr. Hessel at Exponent has published on a case-controlled study of prostate cancer and atrazine exposure where he concluded that there wasn't a -- there was no evidence for an association between atrazine and prostate cancer, right? You're aware of that?
A. Sir, I haven't seen this publication.
Q. Are you aware that ChemRisk has written papers concluding that there was no evidence between the -- between exposure to pesticides and Parkinson disease which was funded by Crop Life America?

A. I'm not aware of that publication.
Q. Were you aware, sir, that Exponent actually wrote a paper where they concluded that there was no risk of obesity from putting soft drinks in high schools, funded by the American Beverage Association?
A. Sir, I'm not aware of that publication.
Q. But you cite to Exponent, even though they write papers saying kids drinking soft drinks doesn't increase their chances of getting fat?
A. Sir, these are scientific papers based on scientific evidence. The scientists are the ones that know that data more than you or I.
Q. Now your past consulting work for Garlock related to asbestos personal injury cases, right?
A. As I said, I've been retained by Garlock in a number of cases.
Q. Okay. And you've never, in any case, have you concluded that asbestos exposure to gaskets and packing increase someone's risk for mesothelioma, right?
A. That's correct.
Q. Okay. And Garlock certainly knew of your opinions about asbestos and gaskets before it hired you in this case, right? Before it hired you in this bankruptcy case?
A. Well, certainly the cases I've been involved in they knew what my opinions were.

Q. And they knew what your general opinions were about chrysotile asbestos before they hired you in this bankruptcy case, right?
A. Certainly they would have also known my general opinions about chrysotile.
Q. And you designed the study which is the report that you authored in this case, right?
A. Yes, sir.
Q. And you picked the literature to rely on, right?
A. I first selected the universe of data, and then selected from that the data would be used in the assessment.
Q. Okay. And let's talk a little bit about this asbestos exposure assessment. You've never authored an asbestos exposure assessment that involved this many different occupations; that's fair, isn't it sir?
A. This is a large group, that is correct.
Q. And involving this many people there are approximately 4,000 pending claimants, give or take. You haven't done assessments with that many people in that many different occupations?
A. Well, with that many people, probably yes.
Q. But not spread across so many --
A. Not in the complexity, as far as the number of occupations, that's correct.
Q. Okay. Am I correct that you've never authored a

peer-reviewed article about asbestos exposure assessment?
A. That is correct. Specifically on exposure assessment, that's correct.
Q. Okay. You would agree with me that the two biggest topics, the focus of your report are asbestos gaskets and asbestos thermal insulation, right?
A. Yes, sir, that's correct.
Q. Okay. I'll talk first with you about gaskets, then I'm going to talk with you about thermal insulation and then we'll be done, okay?
A. Yes, sir.
Q. All right. Garlock sheet gaskets, you would agree that they had 60 to 80 percent asbestos, generally speaking?
A. I can't say all, but that's a reasonable range, from 60 to 80 percent.
Q. Garlock made chrysotile sheet gaskets, most of the gaskets -- in fact, the majority of the gaskets they made were chrysotile sheet gaskets, right?
A. From my understanding, that's correct.
Q. And they also made -- you also know they made gaskets with crocidolite in it too, correct?
A. Yes, sir.
Q. And the chrysotile that Garlock got came from Canada, right?
A. I don't know all the sources, but I know some of the

sources came from Canada. I don't know all.
Q. Okay. Now, you know that Garlock has put out an MSDS for the 900 gasket, which is a fairly typical chrysotile gasket, right, you've seen that before?
A. I have seen that, yes.
Q. And when Garlock -- that's a chrysotile sheet gasket. And when Garlock wasn't in the courtroom and said, "chronic -- if breathing amounts of asbestos fibers can cause lung disorders such as asbestosis, pleural plaque, lung cancer and mesothelioma." You know Garlock said that in its MSDS over -- almost 30 years ago, right?
A. I don't see the date of that, but --
Q. It looks like it's 1989, so 25 years ago it said that?
A. I have no reason to quibble over -- if you're pulling that directly from the MSDS.
Q. I say assure you I am. And then what they also say is that the "dust from the sheet should be treated as free asbestos. Secure the area and clean up using HEPA filter, vacuum or wet sweep. Do not clean up in a method that creates dust." That's what Garlock said outside of court 25 years ago in this MSDS, right?
A. Again, I don't have that in front of me, but I assume you've taken that directly out of that MSDS.
MR. FINCH: And Your Honor, this one is already in evidence as ACC Exhibit 3 or 4, one or the other.

Now let's talk a little bit about friability. Friability is an asbestos-containing material that can be crumbled, pulverized or reduced to powder by hand pressure. And you agree with me this is the definition of nonfriable asbestos from the EPA regulations, correct?

A. It looks like that's my recollection of what the regulations specify.

Q. Okay. So what nonfriable is, it's something that when dry cannot be crumbled, pulverized, or reduced to powder by hand pressure, right?

A. That's correct.

Q. Okay. Then there's a definition further on in the regulations that says, "category one, nonfriable asbestos-containing material, means asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos", right? You know that's what the regs say, right?

A. I haven't looked at that for some time. Again, if you pulled that out of the reg -- if I could see that copy to see what it's referencing?

Q. Sure.

THE COURT: Why don't we take a break?

MR. FINCH: I apologize, Your Honor.

THE COURT: About that time anyhow. Come back at 10 minutes after 11.

MR. FINCH: Okay.

(Recess at 10:54 a.m. Court resumes at 11:11 a.m.)

MR. FINCH: Your Honor, ready to proceed?

THE COURT: Yes.

Q. Mr. Henshaw?

A. Yes.

Q. When we broke, we were discussing the environmental protection agency regulations and the definition of friability. And there is a definition, "category one, nonfriable asbestos-containing material, means asbestos-containing packets, gaskets, resilient floor covering and asphalt roofing products containing more than 1 percent asbestos."

You've had an opportunity -- you have the regulations in front of you, and you would agree that that is correct, right?

A. That is correct.

Q. Okay. And you would agree that Garlock gaskets and packings would fall into the definition of category one nonfriable asbestos-containing material, correct?

A. I believe that's correct, yes.

Q. Okay. And you also agree that if asbestos gaskets are sanded, grinded, cut, or abraded, they are to be treated the same as friable asbestos material under the EPA regulations, correct?

A. Well, I know that you can generate fibers, certainly,

when you do it that way. And you're referring -- do you have that piece of regulation?

Q. It's in that same piece of paper that I just handed you. If you turn to Section 61-141, which is -- it's got page 93 at the bottom of mine. You see there's a definition for regulated asbestos-containing material, see that?

A. Yes, sir, I do.

Q. Okay. By regulated that means when you have to take precautionary measures. That's what the regulations are about, right?

A. There are certain precautionary measures, that's correct.

Q. Right. And it means friable asbestos material, category one, nonfriable asbestos-containing material that has become friable. And we just established that category one nonfriable asbestos-containing material would include a Garlock gasket, right?

A. Category one nonfriable would include a Garlock gasket.

Q. And so category one nonfriable asbestos-containing material, which means you see a little red dot there, that's where I'm at.

A. I do.

Q. So we can -- replace category one nonfriable asbestos-containing material would include Garlock gaskets, right?

A. That's -- most part that's correct, yes.

Q. So if a Garlock gasket that will be or has been subjected to sanding, grinding, cutting or abrading, it will be treated as a regulated asbestos-containing material, correct?
A. Certainly it is a asbestos-containing material. I'm not sure what you're getting at, however.
Q. Well, if a -- you have -- you testified in the past that if asbestos gaskets are sanded, grinded, cut or abraded, they are to be treated the same as friable asbestos material. That's what this regulation says, right, sir?
A. What this regulation basically says is, if you grind, sand, and cut and abrade, you can generate asbestos fiber.
Q. And that therefore it has to be treated the same as friable asbestos material under the definition of regulated asbestos-containing material, correct?
A. Well, there is rules on friable material, and then there are rules that deal with category one, Nonfriable, if you sand, grind and cut and abrade, that is correct.
Q. And if you sand, cut, grind or abrade a Garlock gasket, it will be treated just the same as friable asbestos material under this regulation?
A. Well --
Q. Under this definition of this regulation?
A. We're talking about definitions, not the treatment of various products. Talking about definitions.
Q. Under this definition, if a Garlock gasket is sanded,

grinded, cut, or abraded, it gets treated as a regulated asbestos-containing material, just like a friable asbestos-containing material?

A. No, it's not just like a friable asbestos material. Does it fall under that definition? Yes. If you sand, grade, grind, you can generate asbestos fiber, therefore EPA has some rules to follow if you do that.

Q. All right. That was my point.

THE COURT: Before you go on, we're talking about EPA or OSHA?

MR. FINCH: This is EPA.

THE COURT: This is EPA regulation.

MR. FINCH: This is EPA.

For the record, the EPA regulation is 29-CFR-61 -- Section 61.141.

THE WITNESS: No, sir. It's not 29-CFR.

MR. FINCH: Excuse me. It's in Code of Federal Regulations 61 --

THE WITNESS: I believe it's 41.

MR. FINCH: Forty-one.

Q. All right. In your exposure assessment you rely on deposition testimony in determining frequency of gasket work, duration of gasket work, frequency of insulation removal, duration of insulation removal, and the proximity of bystander to insulation, right?

A. That is correct, yes, sir.
Q. Most of the depositions that you had access to or got from Garlock, were taken in the 2005 to 2010 timeframe, is that when the bulk of them were?
A. I don't recall exactly. Certainly the historical cases may be older. I remember maybe in the 1990's timeframe. But I can't say all of them were in that timeframe, but generally that's probably true.
Q. Generally of the depositions you reviewed of the -- you had the 20-plus -- let's clear this up. You had 27 historical depositions that cases -- they were over before Garlock went into bankruptcy. Either they had settled, or they were dismissed, or they had gone to verdict or whatever. Those cases are done. They weren't part of the pending claimants' universe, right?
A. Yes, sir. That's my understanding.
Q. Okay. So those are the first 27 depositions you got, and they were provided to you by Garlock's lawyers, right?
A. Yes, sir. That's correct.
Q. Okay. And you don't know what the criteria was that Garlock applied to find those first 27 depositions, correct?
A. No. What I specified was -- I want the most informative testimony that I can find in respect to frequency and duration of gaskets and other sources of asbestos.
Q. Okay. That's what you told Garlock's lawyers you wanted.

You don't know how many depositions historically they had access to pull those 27, correct?
A. No, sir. I just told you my criteria. I don't know what the universe was from their side.
Q. Okay. So Garlock's lawyers -- you said, get me the most representative testimony. And Garlock's lawyers pulled 27 historical cases for you to look at, right?
A. That's correct. I was specific about it. I wanted frequency of duration and conditions, workplace conditions to the extent I can get that.
Q. Okay. So you don't know if Garlock has thousands or even 10,000 depositions and historical cases that has access to. You don't know what that number is, correct?
A. I don't know what the universe is, no.
Q. Would it surprise you to learn that Garlock has been sued several hundred thousand times in asbestos cases?
A. I have no idea, sir.
Q. So you don't know of those several hundred thousand asbestos cases, how many of them were depositions where there was some testimony about gasket work?
A. Sir, I don't know what the universe is like.
Q. Okay. So in any event, Garlock selected the 27 depositions, and you relied on the testimony of the people in those, the workers in those 27 depositions, at least in part in forming your opinions here, is that fair to say?

A. Well, as I stated earlier, it was for -- to get a representation of the data that I could get from the depositions. Because we didn't have the depositions. So I only had the 27. So the depositions came later, the 249 depositions came later.
Q. Okay. The "we" in that sentence was we at ChemRisk didn't have the depositions. Garlock's lawyers had some number of depositions which you don't know, correct?
A. As I said, I don't know what the universe was like.
Q. Okay. So you got the 27 historical depositions, and then you got, I think your slide said something around 300 additional depositions that came in through the questionnaire litigation process, right?
A. No, sir. It was about 547 I believe, which represented 306 of the claimants.
Q. I misspoke. There was 300 people, and you got about 500 depositions. So on average, one or two depositions per 300 -- per case, right?
A. Well, that -- if you just take the raw numbers, that's about correct, yes.
Q. Okay. Some cases might not have had a deposition, other cases might have had five depositions. But if you average it out, you got 500 depositions?
A. Well, all -- all the 306 had depositions. Some had multiple depositions.

Q. Okay. That's all I was getting at. And that universe of depositions, that's -- it's your understanding that those depositions came from people who had responded to questionnaires as part of the discovery in this bankruptcy case; is that right?
A. They're part of the claimants in this bankruptcy case. I got 400 or 249 of all the depositions that were available, initially, after the 27 historical cases. Then I asked for some more. And that's when the supplemental questionnaire was sent out to, I think, 471, of which I got about 400-plus back.
Q. Okay.
A. And some of those contained depositions.
Q. Okay. And ballpark it, you had about 500 depositions in addition to the 27 historical depositions; is that right?
A. Little more, obviously, 547 I believe.
Q. Okay. And of the 520 -- 547 minus 27 -- the 520 depositions, the great majority of those were depositions taken in the 2005 to 2010 timeframe, right?
A. Again, I don't recall the precise years. I did not focus on that. I was focusing on the detail in the depositions in respect to frequency of handling gaskets and packings and other sources. So I can't say what the exact dates were.
Q. Well you know that a lot of them were in the 2005 to 2010 timeframe, right?
A. Yes, sir.

Q. You cite to -- in your report, some of the depositions you cite to are dated in 2002, like on page 39 -- 2010, like on page 39 of your report. That's one of the ones you cite to, right?
A. Yes.
Q. So -- and you rely on those depositions for two purposes, you also got six ACC depositions, right?
A. That's part of 306 claimants, yes, sir.
Q. Okay. And you don't know -- you've heard of the ACC, the Atlantic Coast Conference Basketball Conference before this case, right?
A. Yes, sir.
Q. Have you ever heard of the ACC that -- I represent the ACC, the Asbestos Claimants Committee and Mr. Inselbuch and others do in this case. You ever heard of that before this case?
A. No, sir.
Q. Okay. So you didn't know what it was, or how Garlock selected -- why -- how or why it selected those six ACC depositions, right?
A. No, sir, I don't, except they are part of the committee, they're representative of the committee. I don't know the precise language.
Q. Okay. And then you primarily focused on depositions in your assessment. You didn't read every affidavit or

interrogatory that might have been submitted with the claimant's information that you got in response to supplemental questionnaires, right?

A. No, sir. I read every affidavit, as well, that was submitted.

Q. Okay. You didn't read all the interrogatory answers, correct?

A. No, sir.

Q. And then let's -- focusing just on the universe of the 500 depositions. You relied on that for two purposes. One, to assess gasket exposure. And two, to assess exposure to thermal insulation; is that right?

A. To the extent I could. I wanted descriptions in respect to frequency and duration and proximity to gasket and packing activity, as well as insulation activity.

Q. Okay. And in many of those depositions, the claimants or other people testified about people doing gasket work where they were also being exposed to thermal insulation, correct?

A. That's correct.

Q. Okay. The duration of gasket work, you showed some slides to the court where you estimated the duration and removal was estimated at 30 minutes; is that right?

A. That's correct, yes.

Q. And you cited papers offered by Amy Madl as part of your estimation of gasket work, correct?

A. That's correct, yes.
Q. She works for ChemRisk, and you know she's an expert for defendants in -- for gasket defendants in asbestos litigation, correct?
A. Yes, sir.
Q. You cited papers to Mister -- by Mr. Boelter, correct?
A. Yes, sir.
Q. And Mr. Mangold, who you know Garlock has funded his research, correct?
A. Yes, sir.
Q. In your duration of gasket work section of your report, you cite to only one deposition of Mr. Dagle who was one of the 27 depositions selected by Garlock; is that correct?
A. I believe that's correct.
Q. You didn't include any time for cleanup, correct, in your estimates?
A. No, I did not include time for cleanup.
Q. Okay. Even under your assessment, a substantial percentage of occupational groups did have at least some opportunity for exposure to asbestos from gaskets, correct?
A. Yes. From one to four, I estimated what that exposure would be for gaskets and packing.
Q. Right.
A. Either direct or bystander.
Q. Right. And one was obviously higher than four, but there

were lots and lots and lots of different occupations under one, two, three and four, correct?
A. All four, there were lots of occupations and industry combinations in one through four, that's correct.
Q. Okay. Now you said when you put people in -- you put -- there was also a category five where you would put people if their occupation and industry didn't make any sense. And I believe the example you cited the court is if somebody said they did brake work at an asbestos manufacturing facility; is that right?
A. No, sir. That's not correct. I said doing automotive work, not necessarily brake work in asbestos manufacturing.
Q. Okay. Doing automotive work in an asbestos manufacturing facility?
A. Industry --
Q. Industry.
A. Yes, sir.
Q. And asbestos manufacturing industry would be something like a company that makes asbestos-containing thermal insulation, that would be the asbestos-manufacturing industry?
A. I believe that's -- yes, that would be the manufacturing industry, that's correct.
Q. So a company like Owens Corning would be an example of a company in the asbestos-manufacturing industry, right?
A. At one time, that's correct, yes.

Q. And people who do automotive work can be exposed to gaskets, correct?
A. To some extent, but I did not incorporate the automotive industry into my assessment.
Q. Okay. You would recognize that Owens Corning could have had people that were its employees that were automotive workers, right?
A. I suspect there are motor pools and there may be people working in the machine shop.
Q. Okay. Now you would agree with me that all of these organizations have stated that there is no safe level of exposure to any type asbestos, right?
A. I am aware of many of those policy statements, yes.
Q. Okay. And you just testified on direct that in your view, the OSHA regulations provide a safe level of exposure to asbestos, even for cancer; is that correct?
A. Yes, sir.
Q. All right. The OSHA regulations -- you're familiar with the OSHA regulations. You were the head of OSHA, right?
A. I am familiar, and I was the head of OSHA, yes.
Q. In June of 1986 they published regulations. And they stated in June 1972, "OSHA promulgated a new final standard that established an eight-hour time weighted average PEL of 5 fibers per cubic centimeter, and a ceiling limit of 10 fibers per cubic centimeter. These limits were intended primarily to

protect employees against asbestosis, and it was hoped they would provide some incidental degree of protection against asbestos-induced forms of cancer." That's what OSHA said in 1986, correct?

A. That's the information OSHA had in 1972.

Q. All right. And then in 1994 it published the current regulations for asbestos, correct?

A. Yes, sir.

Q. That's a page out of the Federal Registry August 10, 1994. The day before my birthday. And it says, "A significant risk remains at the PEL of 0.1 fibers per cc, and it is feasible to attain lower levels for some workers exposed to asbestos."

That's -- OSHA said that there is still significant risk remaining at the level they were setting the exposure limit at, right? That's what they said?

A. This comes out of the preamble of the standard which justifies the rule making. And it's based on the linear no threshold extrapolation of data that was used in late '70s that Nicholson put together in the early '80s.

So it's based on high-level exposure primarily to mixed fibers and amphibole. That's the mathematical extrapolation. That's where that came from.

Q. OSHA goes on, these regulations are about 50 pages thick. And is says, "after a comprehensive review of the evidence

submitted concerning the validity of the 1984 risk assessment, OSHA has determined that it will continue to rely on the earlier analysis. The agency believes that the studies used to derive risk assessments remain valid and reliable, and that OSHA's decision to not separate fiber types for purposes of risk analysis, is neither scientifically nor regulatory incorrect." That's what OSHA wrote in 1994 in connection with these regs, correct?

A. That is correct. The '84 risk assessment, and from a regulatory standpoint, that's the position the agency took.

Q. And you know that there was a public comment procedure -- period before these regulations were published, right?

A. That's part of the rule-making process, yes.

Q. People could submit whatever information they wanted to OSHA, correct?

A. Well, not whatever they wanted, but yes. Good information, that's what the agency needs to properly rule -- rule make.

Q. Second, the regulations go on to state, the Federal Register says, "As stated in the 1986 asbestos standard, even if OSHA were to accept the premise, which it does not, a chrysotile may present a lower cancer risk than other asbestos fiber types, occupational exposure to chrysotile asbestos still presents a significant risk of disease at the revised PEL." That's what OSHA wrote, right?

A. That's in the '86 standard. Yes, that's correct. Again, based on that linear no threshold extrapolation.

Q. But OSHA -- and before it published this reg in 1994, got new evidence -- "Some new evidence on the issue of differential risk of asbestos fiber types was submitted by both supporters and detractors of that theory. Among the studies submitted in support of the lowered risk of chrysotile asbestos, are those of Churg and others showing that the lung burden of mesothelioma victims is predominantly amphiboles, even though high chrysotile exposure levels were reported. As noted above, this line of argument was presented in the earlier asbestos rule making, and OSHA had concluded that lung burden studies are inconclusive."

That's what OSHA wrote in 1994, correct, sir?

A. Based on the earlier rule making that's correct.

Q. And they got new submissions from organizations including the Asbestos Information Association in the 1990 -- in -- reaching the 1994 regs, right?

A. I don't know all the sources of information during that process.

Q. "OSHA believes that its conclusion to treat all asbestos fibers as having similar potency in the occupational setting remains valid."

Are you aware that the -- can I have the '94 regs?

MR. FINCH: May I approach, Your Honor?

THE COURT: Yes, sir.
Q. Mr. Henshaw, I'm showing you the first copy of the regs. It says that, "several major participants in the rule-making proceeding included the AFL-CIO, the building and construction trades, Department of AFL-CIO --
COURT REPORTER: I'm sorry, can you slow down, please.
MR. FINCH: -- the building and construction trades, Department of AFL-CIO and the Asbestos Information Association." Do you see that?
THE WITNESS: I see the statement saying "including". They're not all inclusive. They haven't identified everyone who is participating.
BY MR. FINCH:
Q. Are you aware that Garlock, at one time, was part of the Asbestos Information Association?
A. I vaguely recall, but I don't know. I just don't -- I don't recall that.
Q. You wouldn't dispute it, would you?
A. I'm not going to dispute it, no.
Q. You know that NIOSH is the research arm for OSHA, right?
A. It's the research arm for Occupational Safety and Health, and OSHA and NIOSH work together, yes.
Q. Okay. And NIOSH put out a road map in 2011, correct, sir?

A. Yes, sir.
Q. And in the road map they continue to say, do they not, that the permissible exposure limit now does not protect against the risk of cancer, right?
A. Again, because of that quantitative risk assessment, no threshold model. That's correct.
Q. You know that in 1976 the revised recommended asbestos standard -- the standard was recommended with the stated belief that "it would prevent asbestosis, and with the open recognition that it would not prevent asbestos-induced neoplasm."

Do you know that's what the Department of Health, Education and Welfare for NIOSH stated in 1976, right?
A. That's NIOSH criteria document published in 1976. That's correct.
Q. And in that criteria document they listed studies of human populations carcinogenicity, and they had for mixed type of fibers, they list six or seven different studies, and the finding is evidence of association between mesotheliomas and past exposure to asbestos, and for the group and exposure -- occupational exposures in some cases as brief as one day. That's what NIOSH -- those studies are what NIOSH is relying on in 1976, correct?
A. They were some of the studies that they cited in their criteria document.

Q. And then the British Thoracic Society is not a regulatory body, is it, sir?
A. Not that I know of.
Q. It's a medical society in -- I guess it's still a kingdom, the Kingdom of Great Britain, right?
A. Yes, sir.
Q. And the British Thoracic Society has stated there is no evidence for a threshold dose of asbestos below which there is no risk, correct?
A. I haven't seen the study or seen the evidence here, but I have no reason to quibble with that.
Q. Now let's talk about the types of asbestos that have been used in the world. That is a picture that Captain Wasson, who was an expert for Garlock on piping systems, showed the judge on Monday. And this is hard thermal insulation. And this is one of these portable pads. Is that consistent with your understanding of what this would be?
A. It appears to be pads that have been sewn in.
Q. You can't tell from looking at that whether -- who made that insulation, right?
A. No, sir, I can't.
Q. And you agree with me when you were reviewing the testimony of the current claimants, I'm talking about the 27, and I'm not talking about -- excuse me. I am not talking about the 27, but for the 500-some, they freely admitted that

oftentimes they would have been exposed to asbestos from thermal insulation during either their own activities or other people doing stuff around them, right?

A. Yes, sir.

Q. Okay. And sometimes they might know if they were there when somebody was putting insulation in and they happened to see a box and it said Kaylo, some of the times the people would say, yes, I know the name of the insulation. But for a lot of the removal activities, many of the times the claimant or whatever co-worker was testifying, would have no idea who made the insulation, but would say yeah, I know it was thermal insulation, I just don't know who made it. You recall testimony like that when you reviewed your 500 depositions, right?

A. I recall testimony of identifying various products. I don't know how they recalled that. But they identified numerous asbestos-containing insulation products.

Q. So even in the current claimant depositions, a lot of the claimants would say, oh yeah, I remember that there was unibestos there. I remember there was Johns-Manville thermabestos (phonetic) there. Some of them did freely say what they could recall about the name brand of the insulation, right?

A. That's correct, yes.

Q. Some of them didn't know the name brand of the

insulation, but they said, yeah, I'm sure it was thermal insulation, I just don't know who made it, right?

A. There were some obviously couldn't recall brands, but there were many who recalled the brands.

Q. And this was for the depositions in the 500-claimant universe in which -- of people who have claims pending right now against Garlock?

A. Yes, sir.

Q. Okay. Now this asbestos thermal insulation comes in different types, you would agree with that, right?

A. It does come in different types. When you say types, I think you mean by shapes and forms.

Q. Shape, sizes --

A. -- concentrations.

Q. And concentrations of asbestos, right?

A. Yes, sir.

Q. And there is what's called half rounds which are defined as friable asbestos that you can crumble, right?

A. That's correct.

Q. And half rounds can have differing concentrations of asbestos. Can have chrysotile with a little bit of amosite, or chrysotile with a lot of amosite, or just chrysotile, right?

A. Depending on the year. Obviously there was a switch out in various fiber types over the years. But it could vary in

the mixture of asbestos fibers.
Q. And in the cement, the insulating cement that goes over top of the pipe, that's almost usually always chrysotile, right?
A. Not entirely, but a majority would be chrysotile.
Q. Then there would be cloth wrap around the pipe, and that could be oftentimes -- most of the time that was -- if it was a wrapped cloth around a half round, it was usually chrysotile cloth, right?
A. That's correct.
Q. And the -- you haven't done any testing of various types of asbestos insulation to find out whether even in what's called amosite thermal insulation, whether it was a majority chrysotile, and some amosite, or vice versa, right? You haven't done that kind of testing in your life?
A. I certainly have reviewed the literature in respect to what's reported in the various types. But I have not specifically done that analysis myself.
Q. Okay. Now you have cited literature about -- in your report, you cited to a paper by Virta in 2005 that's about -- I'll get you references here. Let's see. Do you have your report up there?
A. Yes, sir, I do.
Q. Virta 2005, Mineral Commodity Profiles-Asbestos, USGS Circular 1255-KK. You cite to that on page 55 of your report,

correct?
A. Yes, I do.
Q. You're familiar with that document?
A. Yes, I am.
Q. And this graphic that I have shown up on the screen here comes right out of that Virta document, correct?
A. It does.
Q. And that shows the world's use of asbestos -- world production of asbestos by type from 1900 to 2003. And the purple color there is chrysotile. Do you see that?
A. Yes, sir, I do.
Q. So, just eyeballing this, you would agree with me the overwhelming amount -- the overwhelming production of asbestos by fiber type in the world for the past 100 years has been chrysotile, right?
A. This is volume. This is based on volume sold. With thousands of products that contained asbestos, majority of them contained chrysotile.
Q. And so this is the page before on Virta where the talk about U.S. apparent consumption of asbestos from 1900 to 2003. About 25.6 million metric tons of chrysotile, about 282,000 metric tons of amosite were used in the United States, right?
A. Again, that's total for all products. If you look at specifically what products had, you'll notice that amosite is a predominant product or fiber in insulation.

Q. In some types of insulation, correct, sir?
A. Well certainly not a cloth, because you can't weave amosite. A cloth is a wrapping around it. That's correct.
Q. All right. You're familiar with this document. This was published by AIHA in conjunction with an alliance with -- it's an OSHA-cooperative program, correct?
A. Yes, sir. I'm aware of that.
Q. Okay. And this was published and became available on the AIHA web site and the OSHA web site at the time that you were the director of OSHA, correct?
A. I don't know when -- certainly when I was director of OSHA, we created the alliance program. I don't know when this was written.
Q. Okay. And this is talking about asbestos-containing floor tiles, right?
A. Yes, sir.
Q. And asbestos-containing floor tiles, I think you would certainly agree, are made of encapsulated chrysotile asbestos, if they have any asbestos in them at all, correct?
A. That's correct. As far as I know, yes.
Q. And what this OSHA alliance AIHA document says is, when asbestos floor tiles are abraded, minute asbestos fibers are released into the air and get trapped in the lungs. Asbestos is a known human carcinogen, and no known safe threshold -- with no known safe threshold of exposure."

That's what was written in the document, which is intended for the lay public to read and rely upon, right?
A. It is intended for the lay people to rely upon. But the alliance program was all about -- associations like AIHA help OSHA get their message out, and that's what the purpose of alliance program is all about.
Q. And it says in this document, does it not, sir, "that inhaling asbestos fibers can also lead to cancer of the lining of the lungs or the abdomen, which is always fatal."
And by that, "cancer of the lining of the lungs or abdomen", they're referring to mesothelioma there, right?
A. Yes, sir, they are. And this is basically the OSHA language. And AIHA is helping get the message out to the community.
Q. All right. I want to talk with you briefly about what some other corporations have said about the potential exposures or hazards from gasket works.
You are familiar with this document from Johns-Manville, it's a series of memos that we obtained from the Manville Trust. You've seen this document before, have you not, Mr. Henshaw?
A. I can't say for sure. I've seen a number of Johns-Manville memos. But I can't -- I would have to look at the entire document.
MR. FINCH: Your Honor, may I approach the witness?

THE COURT: Yes.

MR. FINCH: I will mark this as ACC Exhibit No. 5 and I'm going to offer it.

MR. HARRIS: He's offering it now, Your Honor, but we would object to the admission of this document on the grounds of relevance and authentication.

THE COURT: Overruled. He may examine him about it.

MR. FINCH: Your Honor, the authentication and the fact that it's a business record is established by the certification of the administrator of the Manville Trust on the first two pages of the document.

And I think under the Federal Rules of Evidence it meets the authenticity requirement based on that certification, as well as the exception under hearsay of the business rule. It's also an ancient document. And the authentication rule requires -- complies with Rule 901 and 902 under the Federal Rules of Evidence. So I'm offering this substantively.

MR. HARRIS: Is this on your exhibit list?

MR. FINCH: Yes, it is.

MR. HARRIS: What's the exhibit?

MR. FINCH: I don't have the exhibit number. It is on our exhibit list. I don't know the exact --

THE COURT: Go ahead and we'll allow an examination.

MR. FINCH: Okay.

Q. So, this is a document that you were shown in the Newport News trial, isn't it so Mr. Henshaw?
A. I don't recall.
Q. What the document is, it's a document on Johns-Manville from people within -- you recognize Johns-Manville as the major maker and miner and seller of asbestos products in the world, right?
A. I don't know world, but I know it's a major producer -- it was a major producer, yes, sir.
Q. Okay. What they're saying is, they're trying to figure out what products have to be labeled under new OSHA asbestos regulations. And it says, "this will confirm our conversions regarding which JM products shall be labeled under new OSHA regulations."

And they write, "We further recommend that all divisions carefully scrutinize each product on a so-called locked-in list to determine which, if any, are capable of producing asbestos fiber levels in excess of the published limits when they are cut, sawed, grilled, fitted, ground, machined or otherwise handled in normal uses by our customers. Some examples of products that should be viewed closely are number four, certain gasket material that is shipped to a customer, subsequently cut material using a band saw."

You see that on the second page of the document, correct, sir?

A. I see that language, yes.
Q. Okay. And then that memorandum was written June -- July 12, 1972, right?
A. Yes, sir. Yes.
Q. And then about a year later on June 14th, 1973, other people within Manville write that, "we are receiving requests from customers of my products asking if using the JM products in their plants presents health hazards or breaks the law as far as OSHA requirements are concerned. As you know, the part of my product line that contains asbestos is compressed sheet packing."

The Manville employee writes, "The asbestos fiber's entirely encapsulated in sheet packings and coated fabric, and I believe should create no health problems.

"However, I would like all five of the above product lines tested for compliance to OSHA requirements when they are normally used in my customers' plants.

"I will need a documented research report of your findings to submit to customers to protect JM business. Our customers may do all or some of the following things with our products:

"Receive, reship, unpack, store, cut, shear or band saw. Slit, die cut gaskets, punch gaskets, drill, laminate and fold."

So he's asking that there be tests done on the products

which include the gasket products, correct?

MR. HARRIS: Objection, Your Honor, it's misleading. He didn't show the other five products -- or the other four products in the list, all of which are actually used as gasket material. So compressed sheet gaskets is just one, but the others, the asbestos felt, or paper, millboard and felt and coated asbestos fabrics are used to cut gaskets. And so it's misleading unless the entire list is read.

BY MR. FINCH:

Q. Let me rephrase the question. You would agree with me that the letter says, "we are receiving requests from customers for the products," right?

A. Yes, I see that.

Q. And then it goes on, "the part of my product line that contains asbestos is compressed sheet packing, asbestos paper and roll board, asbestos millboard, asbestos felt, and coated asbestos fabrics." He's asking that those things be tested, right?

A. Well, I think what he's saying here is, that's part of his product line. He covers all of those five items.

Q. Okay. And in the next letter, June 22nd, 1973, people at Manville write: "There is no question in our minds that any fabrication of asbestos paper, roll board, millboard, and probably asbestos felt, result in levels far above OSHA requirements. This certainly would cover cutting, sawing,

band sawing, slitting, drilling and probable die cutting and punching of gaskets."

That's what Manville wrote in 1973, right?

A. I see that language, and that's sort of a pejorative discussion but -- where they're talking about it could generate levels above the OSHA standard. And no doubt using a band saw and millboard that will do it.

Q. They also say probable die cutting and punching of gaskets in that sentence too, don't they, sir?

A. They talk about probable. I don't know what testing was done in that case.

Q. This is the Dow Chemical Corporation. You're familiar with this study -- you've seen this report, correct?

A. Yes, sir, I have.

Q. And Dow -- this is a report dated April 1973, and Dow states that "concentrations of asbestos in the general atmosphere during the cutting of gaskets was found to be borderline when compared to the federal regulation, but may be significant when considering possible carcinogenesis."

That's what Dow wrote in 1973, right?

A. This came out of that report. I wouldn't call it a study, but it's a report of a survey that was done at the time.

Q. Right. And the fiber levels they found at Dow for cutting gaskets ranged from the 2 to 5 fibers per cc, right?

A. I recall they had numbers in that range, but those aren't the precise numbers, I don't believe.
Q. They were in that order of magnitude, right? They weren't .002 or anything like that?
A. It depends on what activity was monitored in that survey.
MR. FINCH: May I approach, Your Honor?
THE COURT: Yes.
MR. FINCH: (Handing paper writing to the witness.)
I don't have slides for this. I'll just ask the witness about it.
Q. The activities monitored are described on page 2 of the report, correct, Mr. Henshaw?
A. It's not a Dow Corning, it's Dow Chemical.
Q. It's a Dow Chemical -- I misspoke. It's Dow Chemical. And what they say in the conclusion section on page 2 is that "asbestos fibers are liberated by the gasket cutting operation in significant quantities, and found in the atmosphere throughout the building."
Then they go on to list the concentration of asbestos fibers that they found, correct?
A. I see the results. This didn't make my cut because it doesn't talk about the methodology or -- I don't know whether there's any background exposure in this -- where the study was done, or where the --
Q. Okay.

A. -- samples were taken.
Q. You would agree that Dow Chemical Corporation is not an organization that works for plaintiff lawyers in asbestos litigation, correct?
A. Dow Chemical and the folks who did this would be just exactly what I did when I was with my company as an industrial hygienist.
Q. And if this was a document that was done not -- was created not for purposes of use in litigation. Dow was trying to figure out what to do. And what they concluded was, that the cutting of gaskets was found to be borderline when compared to the current OSHA -- current federal regulations, but may be significant when considering the possible cancer effects," correct?

That's what Dow was worried about?

A. What they were worried about is the extent to which those operations exceeded the OSHA standard. They did not study whether -- what the contributions -- where the contributions were coming from. This is exactly what I did. I'm looking at, is this work environment exceeding the OSHA standard regardless of where the fibers are coming from.

So this is not a gasket study. It's a study that's associated with gaskets, but it does not give me enough information here to say that's where the fibers came from.
Q. Well, there's nothing in this that says there was any --

this was in 1973, correct?
A. Yes, sir.
Q. And this was cutting gaskets, it wasn't removing gaskets from flanges, correct?
A. That's some of the breathing zone samples were taken while operators were doing that kind of work.
Q. And there's nothing in the document suggests there was any thermal insulation in the area, correct?
A. Sir, that's not -- that's not relevant. They're determining whether in fact it exceeded the OSHA standard, not concern about where the source of the asbestos was coming from. Just as I said, that's what I did.
Q. All right. You're familiar --
A. And whatever it took, our job was to keep it below the OSHA standard.
Q. But Dow also noted that even if it's borderline when compared to the federal regulations, it would be significant when considering the cancer effects.
Are you telling me that Dow didn't understand that carcinogens can -- well -- strike the question.
You're familiar with General Electric Corporation, right?
A. Yes, sir, I am.
Q. This is Material Safety Data Sheet from GE, relating to asbestos rubber sheet gaskets compressed made out of chrysotile, see that?

A. I see that, yes.
Q. That's the same type of gasket, same composition of gaskets that Garlock made, correct?
A. I can't say it's the same composition. Certainly the neoprene, nitrile, rubber, that's part of the some of the products at Garlock. I can't say it's the exact composition.
Q. Very similar in terms of asbestos content?
A. Oh, asbestos content, yeah, 90, 60, 90 percent, that's probably in the general range.
Q. And it's chrysotile, right?
A. Yes, sir.
Q. And General Electric says, "the health hazards of these materials results from the release of chrysotile asbestos fibers from the composite mechanical release from cutting, machining, grinding, sawing, drilling, et cetera, release from deterioration of the bonding agent. Excessive inhalation exposure to such airborne fibers can have the usual effects of chrysotile -- it's misspelled -- chrysotile asbestos. Asbestosis, lung cancer and mesothelioma have resulted from the exposure to asbestos fibers."
That's what GE concluded in 1982, right?
A. Speaking of excessive exposures, that's correct. That's what they put in their MSDS.
Q. Let's talk a little about thermal insulation and then you and I will be done.

Am I correct that your assessment presumes exposure levels only for pre-1972 exposures?

A. That is correct. Primarily because of the belief, although it's not an accurate one, I know. But after 1972 the awareness level raised in a lot of our workplaces in respect to exposure, because of OSHA standards. And most of our data -- most of the data that we've seen in the literature, most of the data that I used are relevant to pre-1972 activities.

Q. Somebody has three important messages but why don't we disregard that.

Garlock sold asbestos-containing gaskets well into the 1990s, right?

A. That's my understanding.

Q. And there was testimony earlier in the week that the median latency period for mesothelioma is about 35 years. Which means half the cases will be exposed prior to 35 years ago, and half would have had their first exposure less than 35 years ago?

A. That's -- it's a range, but that's a generally accepted -- there is the middle point and there's above and below that, yes.

Q. Okay. And the gentleman seated beside Jonathan Guy is Joseph Grier who represents the interest of future claimants. Do you understand that?

A. Now, I do, yes. Thank you.
Q. Okay. And the future claimants have the biggest interest in this case in the sense that this judge is going to be doing an estimate of what the liabilities would be for mesothelioma cases arising all the way out to the year 2040 or 2050. Do you understand that?
A. Yes, sir, I do.
Q. Okay. Would you agree with me that by -- as we get further out in time, more and more of the people who would have -- could have been exposed to Garlock gaskets in the '80s, are much less likely to have been exposed to insulation, correct?
A. Not necessarily. The same level of awareness of asbestos, whether it's in a compressed sheet gasket or insulation. But generally insulation was the focus in the '70s, in respect to reducing exposures, and not gaskets and packing. But as we've already stated, the regulations stipulated of handling all asbestos-containing products in a certain way.
Q. Right. But my point is that the regulations in the '72 to '86 timeframe, people were much more aware about putting in place controls for insulation, versus controls for gaskets, right?
A. Certainly the regulatory agencies were, because that's where the exposure occurred.

Q. And --
A. And so that was an emphasis certainly in the '70s.
Q. In your analysis you're assuming that there's not going to be these types of high exposure levels to thermal insulation after controls start coming into place, right?
A. It depends on the industry, but certainly some industries took greater effort to reduce exposures to insulation and all forms of asbestos.
Q. Right. And so if in 1982 a pipefitter was going to go and change a gasket and he knew that there was asbestos-containing thermal insulation there, it's likely that there would have been some kind of controls to protect him from the thermal insulation and not likely there have been anything to deal with the gasket, correct?
A. Well, I'm not sure I could make that leap. Certainly there were controls for asbestos-containing insulation. Some companies put more in the late '70s and '80s. As we know, as I know, there were companies that didn't put any controls in, and that's where OSHA focuses its enforcement action as well as EPA.
Q. Okay. Let me just talk about the frequency of the asbestos insulation removal task. You assume that workers accessing gaskets would have to remove and disturb the asbestos insulation half the time, right?
A. That's correct.

Q. And there's no basis in the published literature for the 50 percent conclusion. You got that based on your review of depositions, right?
A. There's some literature that talks about removing asbestos-containing insulation to get at the gasket. And it's all dependent on that system and what kind of insulation's on that system and that flange.
Q. You didn't have any asbestos bulk sampling for any claimant's job site or air sampling from any claimant's job site, correct?
A. No, sir, I did not.
Q. And your reliance on materials for insulation exposures was included in Mr. Mangold's 2006 paper, correct?
A. Well, the insulation exposure included Mangold's included several others.
Q. Right. Included several --
MR. HARRIS: Excuse me. I object to the extent you're referring to his gasket paper for insulation exposure.
MR. FINCH: No. I'm referring to --
MR. HARRIS: The insulation paper was with Mr. Beckett in 1970.
BY MR. FINCH:
Q. You are relying on, for the insulation exposures, you're relying on Mr. Boelter's study done in this case, correct, in part.

A. For the accessing to gaskets, that's correct, yes.
Q. All right. And it's -- that paper was not published in the peer-reviewed journal, correct?
A. No, sir, not to my knowledge.
Q. And it was measurements related to using a hammer to knock the insulation off a pipe, right?
A. That's correct.
Q. You're aware there are other ways to remove thermal insulation from a pipe, correct?
A. There are other ways. Most common would be the most expeditious, and that would be the hammer.
Q. You know that while you were at OSHA, Mr. Boelter sent a letter to OSHA asking if it was -- if gaskets were exempt from labeling requirements, correct?
A. I am familiar with the letter, yes.
Q. Okay. And I don't want to get into debate with you about what his letter said, or what OSHA said. But while you were at OSHA, he wrote the letter to OSHA and he sent them his 2002 paper. We can agree on that, right?
A. Yes, sir.
Q. And he asked OSHA, OSHA's opinion as to whether gaskets and packing require labeling under the OSHA regulations, right?
A. That was the basic opinion he was looking for, yes.
Q. And ultimately -- you would agree with me that OSHA

said -- the first part of his reply said, no, your findings cannot be used to exempt the mentioned gaskets.

Regardless of the reasons, you agree that OSHA did not change the labeling requirements for gaskets based on Mr. Boelter's letter, correct?

A. There's no way the agency would do that. That's correct. That's not within Rich Fairfax's purview.

Q. Okay. Now, bystander insulation assumptions, I think I heard this correctly. You would assume that there were six and a half hours of bystander insulation exposure, regardless of occupational group; is that right?

A. No, sir. Well, the environments in which somebody may be in proximity to the insulation, that's correct. The distance from the various sources of that is going to vary depending on the exposure group.

Q. Okay. I just -- leaving aside the distance. For distance you're relying on the 2012 -- the distance is the paper you were talking about the farther you get away from the source, the less exposure to asbestos, right?

A. Yes, sir.

Q. And your source for that data was the Donovan paper that was written with the ChemRisk people, correct?

A. It was written by a number of authors. The lead author was from ChemRisk, that's correct.

Q. And but leaving aside the distance factor, am I correct

that for all of the bystander insulation exposure people would have, you're assuming that they are exposed as bystander insulation for six and a half hours of every workday?

A. Again, depends on the distance. Some are people more than 30 feet away, so they're exposed to 1 percent of that. So it depends on the group, and the distance from the source.

No doubt we're exposed to insulation fibers that may be in this room, so it just depends on the proximity.

Q. There is no published paper that concludes every occupation experience six and a half hours of bystander exposure to insulation, correct?

A. I do not know of any specific data to that extent, except the testimony speaks about they're working in those environments all day. Now I didn't consider all day.

Q. Okay. Well, there would only be insulation exposure as a bystander if people were either putting insulation in place or removing it, right?

A. They would be handling it in some way, could be removing, installing. It could be somebody nearby who's accessing a gasket and removing insulation. And if somebody's 30 feet away, they would get 1 percent of that exposure.

Q. Okay. You're aware of this paper by William Marr, correct?

A. Yes, sir, I am.

Q. And this is a paper about the exposure that insulators

have to pipe insulation in a shipyard, and how much -- what percentage of their time the insulators spend doing various tasks, right?

A. Yes, sir. There's several other issues identified in that paper, but that's one of them.

Q. Okay. And this was published in 1964, right?

A. Yes, sir.

Q. You cite in your reliance list, right?

A. Yes, sir.

Q. And what they say is, "during ship overhaul repair and remodernization, pipecoverers and insulators remove all the various types of insulation they have applied", right?

A. That's from the paper, that's correct.

Q. Right. And then they say, "as shown in Table 1, this small portion of time spent in removing excessively dry insulation gives a high exposure to asbestos dust."

This is talking about the insulator's exposure during the rip out, right?

A. That's what he's referring to for the most part. Not entirely, but during the rip outs, that's the highest exposure.

Q. And you would agree with me that an insulator would have a lot more contact with insulation and ripping it out than any other type of trade might have, correct?

A. No, sir, I don't agree with that. Insulators more often

install insulation as opposed to removing it. As some of the deponents spoke about, they removed insulation on a regular basis. Nicholson said 10 percent pipefitters spend 10 percent of their time removing insulation.

Q. Okay. But if the insulation was being put in or removed, certainly wasn't being put in and removed six and a half hours every day, right?

A. Depends on what the operations are. But it doesn't necessarily mean they're removing or installing. They're still tampering with asbestos insulation.

Q. All right. But here in the Marr paper, the percentage of time removing insulation that insulators spent was 2 percent of their time, 3 percent of their time, .5 percent of their time, right?

A. Those are product specific times, 100 percent amosite 3 percent of the time, calcium silicate is 2 percent of the time. So they're being very specific.

Q. Right. If you add it all up it's less than 10 percent of their time, right?

A. I think in this analysis -- I don't know the exact total but somewhere in that neighborhood.

Q. Okay. Now you're familiar with this paper by Amy Madl at ChemRisk, "Airborne Concentrations of Asbestos Onboard Maritime Shipping Vessels, 1978 to 1992"?

A. I'm aware of that paper, yes.

Q. And it was funded by the various owners and operators of merchant marine ships, right?
A. Yes, sir.
Q. What they conclude is that from the 1978 to 1992 timeframe, unless somebody is put in or ripping out insulation, the exposures to insulation handling activities onboard merchant marine ships, were nearly always below the OSHA current permissible exposure limit, correct?
A. They were using data that was available starting in '78 and running through '92 and that this was their conclusion.
Q. And so for Mr. Grier's clients were people who were going to be exposed in the '70s and '80s and not before, this would be a reliable measure of insulation exposure to those type of people, right?
A. Well, depend on the kind of operation we're talking about there, what kind of vessel.
Q. But generally speaking you would rely on that, right?
A. Again, it depends on the vessel. If I'm specifying that particular -- this is -- I think this is not Navy. I think this is just Merchant Marine. But depends on if that's part of my analysis, and I would probably rely on it, yes.
Q. Okay. Mr. Harris mentioned in opening statement, and you talked about it on direct exam, Joseph Rodricks. You know who Mr. Rodricks is, correct?
A. Yes, sir, I do.

Q. You don't mean to suggest to the court that Mr. Rodricks did anything other than a cursory review of your report in this case, right? That's all he did?
A. I have no idea, sir.
Q. Well, to the extent there was any suggestion, let's just clear it up.
May I approach the witness, Your Honor?
THE COURT: Yes.
MR. FINCH: Could I have the ELMO, please?
Q. Do you see the testimony begins on page 83, Mr. Henshaw?
A. Yes, sir, I do.
Q. Okay. What I asked Mr. Rodricks was:
"You said you spent 20 to 30 hours total in the Garlock matter, correct, Dr. Rodricks?
A. I guess. I think that might be a little more, I don't know, but not a lot more.
Q. Would you agree with me that by far the majority of your time was spent on reviewing the Boelter/Rodricks report?
A. Yes."
Q. I read all that correctly, right, sir?
A. Yes, sir.
Q. And you know the Boelter/Rodricks report is the guy hammering on the pipe insulation report, right?
A. That's the Boelter paper that I relied upon, yes.

Q. And then I asked him:

Q. "And so you may have spent at most an hour or two on the Henshaw report, correct?

A. I read Henshaw last week about 10 days ago. I spent more than an hour but not -- that's ballpark. I looked at it again for 15, 20 minutes, just sections."

Then I ask him -- I read that right, correct?

THE WITNESS: Yes, sir.

Q. Then I ask him:

"The chapter you wrote for the Federal Judicial Center Reference Manual on scientific evidence you said was something that would pass the peer-review process at the National Academy of Sciences?

A. It did.

Q. It did. You spent substantially longer than an hour or two on that, correct?

A. Several months.

Q. Okay. And you haven't analyzed the Henshaw report in this matter to -- you haven't given it the same review that the National Academy of Sciences would give something if it was peer reviewing, correct?

A. Well, I was looking for something different. It wasn't intended to be a full peer-review detail. I was just looking at it for its general approaches, general conclusions.

Q. But you certainly weren't applying the same level of rigor and peer review to the Henshaw report, that the National Academy of Sciences applied to your chapter for the Federal Judiciary Center Reference Manual on scientific evidence, correct?

A. No, sir. I didn't say I had done that.

Q. You're aware that the National Academy of Sciences has done risk assessments on health hazards of exposure to asbestos?

A. Yes, sir.

Q. You are not involved in those?

A. No.

Q. But you would expect him to be reliable sources of information, correct?

A. Should be, yes."

Q. Do you see that I read that? I read that correctly?

A. As far as I could follow, that's correct.

Q. Okay. I have here the 1984 National Academy of Sciences Risk Assessment for -- it's called "Risk Assessment Asbestiform Fibers: Nonoccupational Health Risks."

You're familiar with this document, right, sir?

A. I've seen that, yes.

Q. And it went through the National Academy of Sciences Peer Review process, which is one of the highest levels of intellectual scrutiny something can survive, correct?

A. As far as I know, that's correct.
Q. And in this document they looked at the world's literature available at that time epidemiology, animal studies, cell tissue studies, right, correct?
A. I don't recall everything they looked at, but it was supposed to be an exhaustive review.
Q. And they concluded, did they not, that -- can I have the -- I do have the ELMO.

They concluded, first of all, to treat all asbestos fiber types the same, correct? They all were the same?
A. That was the approach in that timeframe, that's right.
Q. And what they put there was that for mesothelioma, the estimated lifetime risk of exposure, they said -- if somebody had a lifetime exposure of .0004 fibers per cubic centimeter, they had an estimated lifetime risk of mesothelioma of 9 times 10 to the 6. That's 9 per million, correct?
A. That's what 9 times 10 to the 6 stands for, yes.
Q. That's a substantially elevated risk of mesothelioma, even at that tiny level of exposure, right? What the National Academy of Sciences has concluded in 1984?
A. As you said, that's in '84. I can't vouch for all the evidence that they used in that assessment.
Q. Now you know since 1984 there had been a fair number of cohorts exposed to chrysotile that had been followed over time, correct?

A. Yes, sir. That's correct.
Q. Okay. Nobody's been -- has been able to get in a time machine and go back into the '40s and '50s and '60s and '70s and collect air sampling measurements of what the dust people were exposed to so that they can update the data for that, have they, sir?
A. Not a time machine. Certainly data has become available over time. Some of it represents past exposures.
Q. But there -- whatever the data exists, the epidemiological studies that exist, there's only -- there are only a handful that have been added every year. It's not like you can go back and redo the science in 1984. Strike the question.

The National Academy of Sciences concluded that there was still a substantial risk of mesothelioma even at the levels of exposure shown in that table, correct?
A. Well, that was the conclusion -- 1984, that was an excerpt from that very large document, that's correct.
Q. And they have never withdrawn that conclusion, correct?
A. I don't know.

MR. FINCH: That's all I have, Your Honor.

THE COURT: Mr. Guy.

CROSS EXAMINATION

BY MR. GUY:
Q. Good morning, Mr. Henshaw.

A. It's good afternoon now.
Q. It is good afternoon now, you're right.
A. I can see the clock from here.
Q. I can't keep track of time either. I represent Joseph Grier, III. You heard from Mr. Finch that Mr. Grier's been appointed by the court to represent people who have claims in the future.
A. Yes, sir.
Q. Do you know, sir, when the U.S. Navy prohibited the use of asbestos-containing insulation?
A. There was a period when they quit purchasing asbestos-containing insulation. But it was still in use for sometime on into the '70s and '80s.
Q. For new ships post-1973, for example, would those new ships have contained asbestos-containing insulation?
A. I believe not, new construction that's -- I believe that's correct.
Q. And do you know when exactly Garlock stopped making and selling asbestos-containing gaskets?
A. No, sir, I don't.
Q. If I was to represent to you it was either 2000 or 2001, would you have any reason to dispute that?
A. No, sir.
Q. When were you first retained by Garlock? When I say you, I mean you in any capacity with any of the companies that

you've worked with?
A. In this case or in this matter or --
Q. In the beginning, very first time.
A. I don't recall precisely, but in the neighborhood of maybe 2008 maybe. I don't recall precisely.
Q. And the opinions that you testified to today to the court, have you held those opinions for a long time?
A. Well, I expressed a number of opinions. Certainly the opinion in respect to this exposure assessment, that's relatively recent after the analysis I did and issued the report. I had the opinions that exposures were always quite low, not zero, but quite low, approaching the numbers that estimated here in the assessment.
Q. So to put a fine point in it, you're right, it was an inartful question.

Your opinion that exposure to asbestos fibers from insulation is a lot higher than exposure to asbestos fibers in working around asbestos-containing gaskets. You've held that opinion for a long time?
A. I've experienced that for a long time, that's correct. That's -- I've been in that -- been in this business awhile and that's correct, yes.
Q. In fact, I think you said in your deposition you've held that opinion since studying in this area of industrial hygiene, would that be fair?

A. Yes, sir. And in the mid-'70s insulation was the number one issue of concern.
Q. And do you have any reason to believe that Garlock didn't have access to that knowledge, that opinion, either from you or from other individuals in this field, in the 2005 to 2010 timeframe?
A. I don't know what Garlock -- and I'm not sure who in Garlock you're speaking of, or who -- is it a representative of Garlock. So I don't know if I can answer that question. I don't know what their opinions were.
Q. All right. Well let's focus on when you were working for Garlock in asbestos trials. You did that, correct?
A. I've been retained by Garlock in asbestos trials in a number of cases.
Q. And you worked directly with Garlock's lawyers, correct?
A. I have -- I have worked with the attorneys involved in those cases, that's correct.
Q. And they were aware of your opinions in the 2008 timeframe on, weren't they?
A. I suspect so.
Q. And they were able to evaluate the strengths and/or weaknesses of those opinions when litigating their cases, correct?
A. I suspect that's correct.
Q. You wouldn't dispute that when settling cases they were

able to evaluate the strength and weaknesses of those opinions, correct?
A. I don't know the settlement process. Suffice to say I suspect they know my opinions, but I don't know the process of settlement.
Q. You have no reason to believe that when they were evaluating settlements, that they weren't able to also consider in that process the opinions that you held?
A. Well, we've already established they more than likely knew my opinions or they wouldn't be talking. But like I said, I don't know what the process is for settlement.
Q. We'll have to ask Garlock's lawyers about that?
A. Yes, sir.
Q. Now you have submitted invoices in this case, correct?
A. Yes, sir, I have.
Q. And are you familiar with those invoices?
A. I'm familiar with a number of them, yes.
Q. When were you first retained to work in this particular case? By that, I mean the bankruptcy case.
A. I believe it was at least a year and a half, maybe two years. I don't know precisely.
Q. You've obviously put in a fair amount of work, correct?
A. Yes, sir.
Q. Do you know the total amount that you billed in this case to Garlock?

A. I don't know the precise number, but I probably put in around 700 hours probably in this matter.
Q. And do you know the total dollar amount that you've invoiced to Garlock in this case?
A. No, sir, I don't.
Q. If I was to represent to you that the amount was $1.8 million as of the time of your deposition, would you have any reason to dispute that?
A. No, sir, I would not.

MR. GUY: No further questions, Your Honor.

THE COURT: Thank you.

REDIRECT EXAMINATION

BY MR. HARRIS:
Q. Just a few questions on redirect.
Mr. Henshaw, you spoke briefly about the amphibole content or the asbestos content in asbestos insulation; is that correct?
A. Yes, sir.
Q. Have you researched that in the course of your work, what types of asbestos fibers were used in pipe covering and block insulation and cements?
A. Yes, sir, I have.
Q. What types, historically, of asbestos fibers were used in pipe coverings, insulation blocks and insulating cements?
A. The majority would be amosite.

Q. I'm going to ask you a couple of questions about some documents that Mr. Finch showed you. The first one had to do with the exchange of correspondence within, internally, Johns-Manville. Do you recall that document?
A. Yes, I do. I have it, yes.
Q. I've highlighted a phrase or one of the things that they were seeking to evaluate, and this is I believe what Mr. Finch focused on.
"Certain gasket material that is shipped to a customer who subsequently cuts material using a band saw."
Is that a common operation?
A. No, not -- that's secondary manufacturing, typically, where they're cutting a gasket with a band saw.
Q. Okay. That's secondary manufacturing. That's not what end users would be doing like pipefitters or machinist mates or the people that are typically in group one; is that correct?
A. That's correct. Typically group one.
MR. FINCH: Objection. Calls for speculation to the extent that he's asking what the author of the document intended.
THE COURT: Sustained to that extent. Go ahead.
BY MR. HARRIS:
Q. Okay. But the reference here to gaskets that Mr. Finch directed the court to, references cutting gaskets with a band

saw, right?
A. Yes, sir.
Q. And that's a secondary manufacturing operation?
A. For the most part that's correct.
Q. Mr. Finch also showed the court a document from Dow Chemical that you discussed with him; is that correct?
A. Yes, sir.
Q. He read parts of the document, but did not show the actual results of the testing that was done. I think he read the first sentence, but then this is -- the second paragraph is actually the concentrations that were reported, correct?
A. Yes.
Q. And they reported some concentrations that were close to the OSHA permissible exposure limit back in the early '70s when this report was written, correct?
A. Yes, sir.
Q. And they reported four fibers, two fibers, three, 5.4 fibers, 3.08 fibers; is that correct?
A. Yes.
Q. I think he just handwrote those on a sheet of paper, but they're actually printed right in the report, correct?
A. That's correct.
Q. And then what it says is, "Note that samples A through D were taken when the area had not been cleaned for several days." Correct?

A. Yes.
Q. That's a housekeeping issue, right?
A. That's correct. That was my point. I don't know where the source of those fibers that were -- where they were coming from.
Q. This was in a shop where secondary manufacturing of gaskets was going on, correct?
A. Yes.
Q. Then they cleaned up the area and the results were like .78 fibers per cc and .12 and .9 fibers per cc, correct?
A. At a cutting table; that's correct.
Q. Those short term samples?
A. They're relatively short term, yes.
Q. And those would actually be below today's current short-term exposure limit?
A. When calculated time weighted average, could be yes.
Q. Well as the short term exposure limit thought. The short-term exposure limit is one, right?
A. Today it's one, that's correct.
Q. Mr. Finch also showed you an excerpt from an MSDS and we've heard about MSDSs. Can you tell us what an MSDS is?
A. It stands for Material Safety Data Sheet. And it's required under the Haz/Com standard, which is the OSHA standard promulgated in 1983. And it really lays out all the information relevant to various products, and has its

ingredients in these products, and it's to cover all possibilities.

Q. Why would you know about Material Safety Data Sheets?

A. I wrote many of them. And in the companies I've been associated with, industrial hygienists get involved in writing them, and when I was director of environmental safety and health I was responsible for those MSDSs. So I wrote many of them.

Q. Are findings by OSHA, the National Toxicology Program, and IARC binding, or are they conclusive under the hazard communication standard?

A. Conclusive, I don't know what you mean by that. But you're required to report those specifics in respect to the OSHA standard or ACGIH TLV. You're required to put them on your MSDSs if you have a certain percentage in your product.

Q. All right. And so if you prepare an MSDS, you're required to report the information provided by those organizations about the material if it's a carcinogen?

A. Yes, sir, that's correct.

MR. HARRIS: Your Honor, may I approach?

THE COURT: Yes.

MR. HARRIS: (Handing paper writing to the witness.)

Q. Mr. Henshaw, I've handed you a document that is an MSDS for play sand; is that correct?

A. Yes, sir. It's from that Quikrete. Yes.

Q. It's Quikrete. And Quikrete comes in a line of products, and one of those is play sand, and that's product number 1113, right?
A. That's one of the products they list in this listing, that's correct.
Q. And then on the second page we see under the different products that this MSDS covers play sand, code 1113, correct?
A. Yes.
Q. And under health hazards it says, "contains silica that can cause severe and permanent lung damage and other diseases. Breathing silica dust can cause silicosis, a lung disease that can cause serious breathing difficulties and death. Breathing silica may cause cancer."
Did I read that correctly?
A. That's the language in the MSDS, that's correct.
Q. And so these companies are companies that prepare MSDSs as required by OSHA, are reporting information about the ingredients of their products that's required under the hazard communication program?
A. Yes, sir.
MR. HARRIS: Thank you, Mr. Henshaw. I'll pass the witness.
THE COURT: Anybody bought a chainsaw? You have to go through about 20 pages about how it's going to kill you before you learn how to start it.

Yes, Mr. Finch.

RECROSS EXAMINATION

BY MR. FINCH:

Q. At the time that Garlock put out its MSDS on the 900 gasket, the government didn't specify the exact language that Garlock had to use in that document; isn't that true?

A. There were section -- there were topics that had to be covered, but the precise language, that's correct.

Q. So Garlock could have added any qualification it wanted to, to the discussion of mesothelioma in the statement in MSDS, correct?

A. Well I think there's limitations, but in general they have -- this is a performance standard. So you can put your language. But there are specific areas that need to be addressed in the MSDS.

MR. FINCH: That's all I have, Your Honor.

THE COURT: All right.

MR. HARRIS: One question.

THE COURT: All right.

REDIRECT EXAMINATION

BY MR. HARRIS:

Q. Is the MSDS a place for scientific debate?

A. No, sir. It's general communication.

MR. HARRIS: Thank you.

THE COURT: All right. Why don't we break for

lunch. You got another witness I guess to call after lunch?

MR. SCHACHTER: Yes, Your Honor. Dr. Weill.

THE COURT: Have you exchanged your lineup cards?

MR. FINCH: They told us the lineup card was Dr. Weill and then Mr. Brickman; is that right?

MR. HARRIS: That's right.

MR. FINCH: I think that would take us through the rest of the day I would expect.

THE COURT: All right. Let's come back at quarter to 2.

(Lunch recess at 12:35 p.m.)

(End of Proceedings.)

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UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF NORTH CAROLINA
CERTIFICATE OF REPORTER

I, Laura Andersen, Official Court Reporter, certify that the foregoing transcript is a true and correct transcript of the proceedings taken and transcribed by me to the best of my ability.

Dated this the 25th day of July, 2013.

s/Laura Andersen
Laura Andersen, RMR
Official Court Reporter